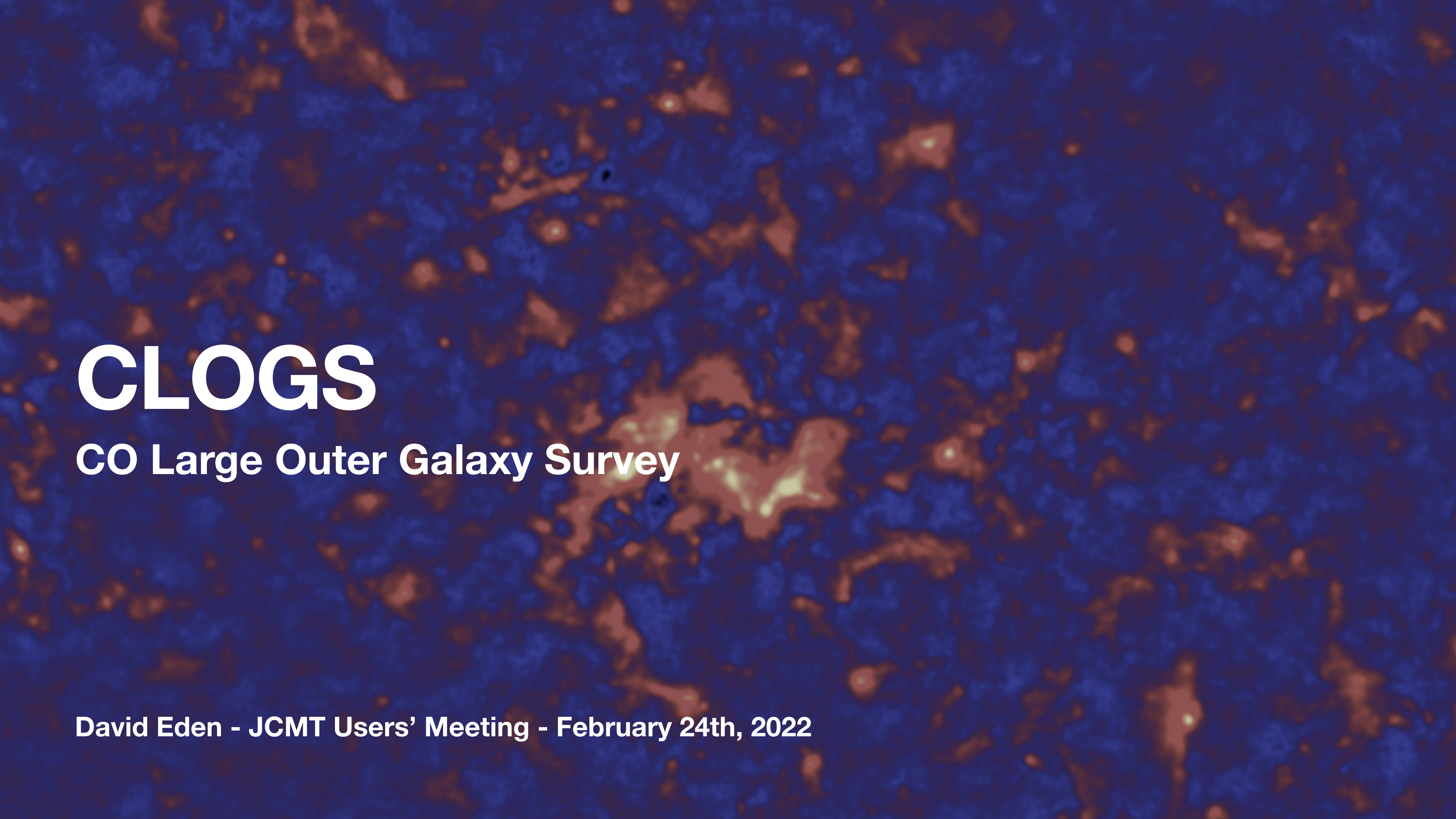




CLOGS

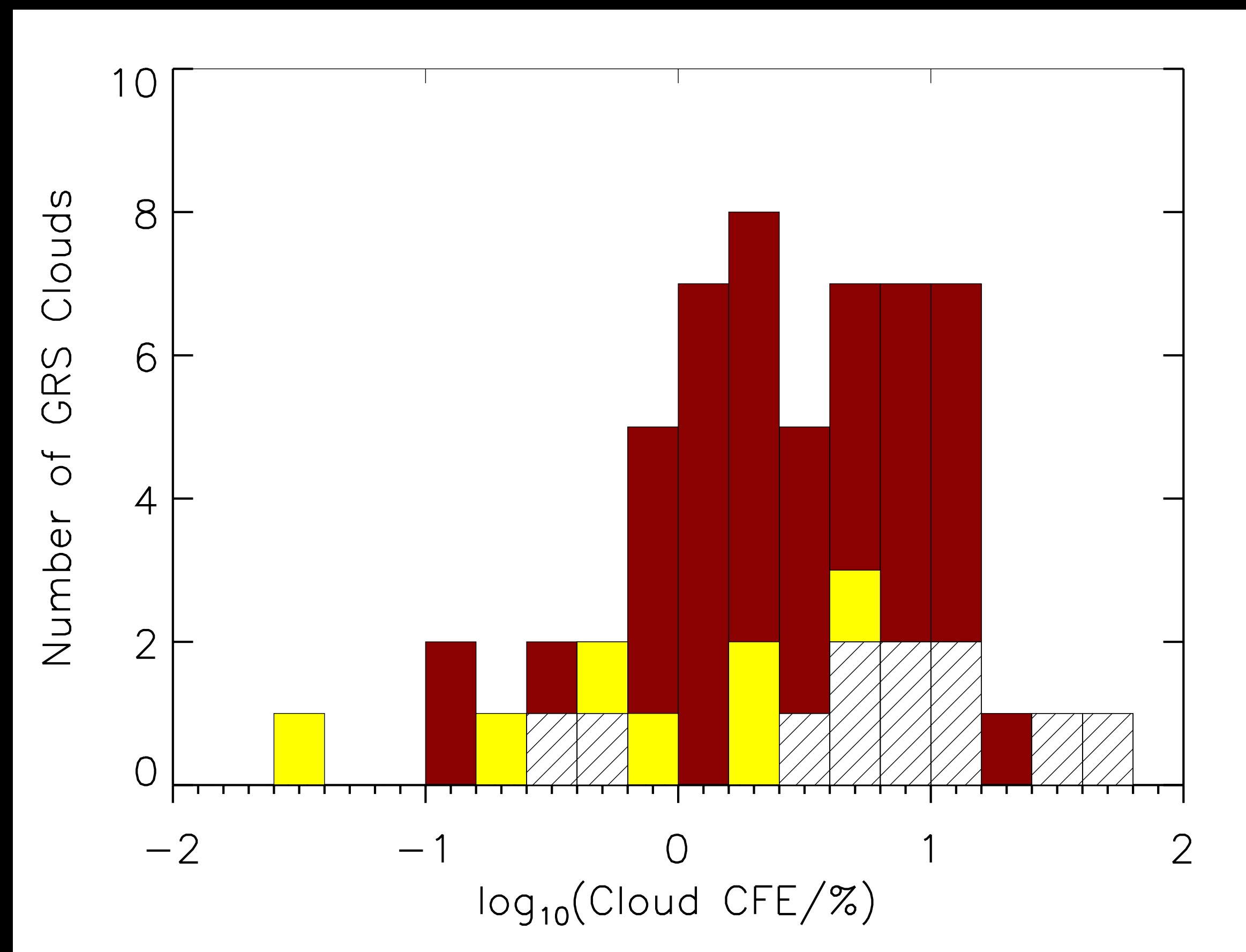
CO Large Outer Galaxy Survey

David Eden - JCMT Users' Meeting - February 24th, 2022

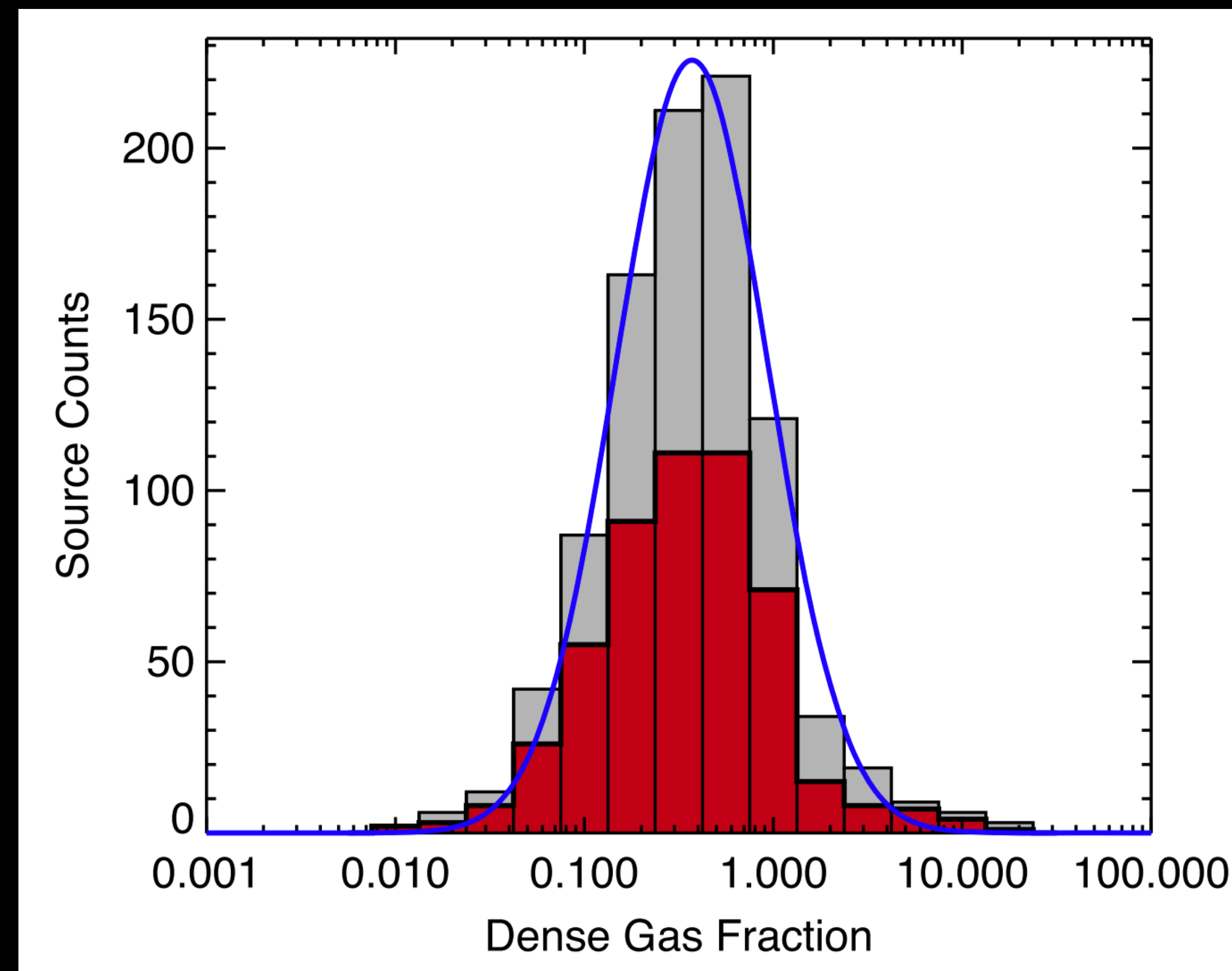
Talk Outline

- Motivation
- Previous JCMT Surveys
- CLOGS - CO Large Outer Galaxy Survey
- Science Goals

Previous Milky Way Results - CFE/DGMF

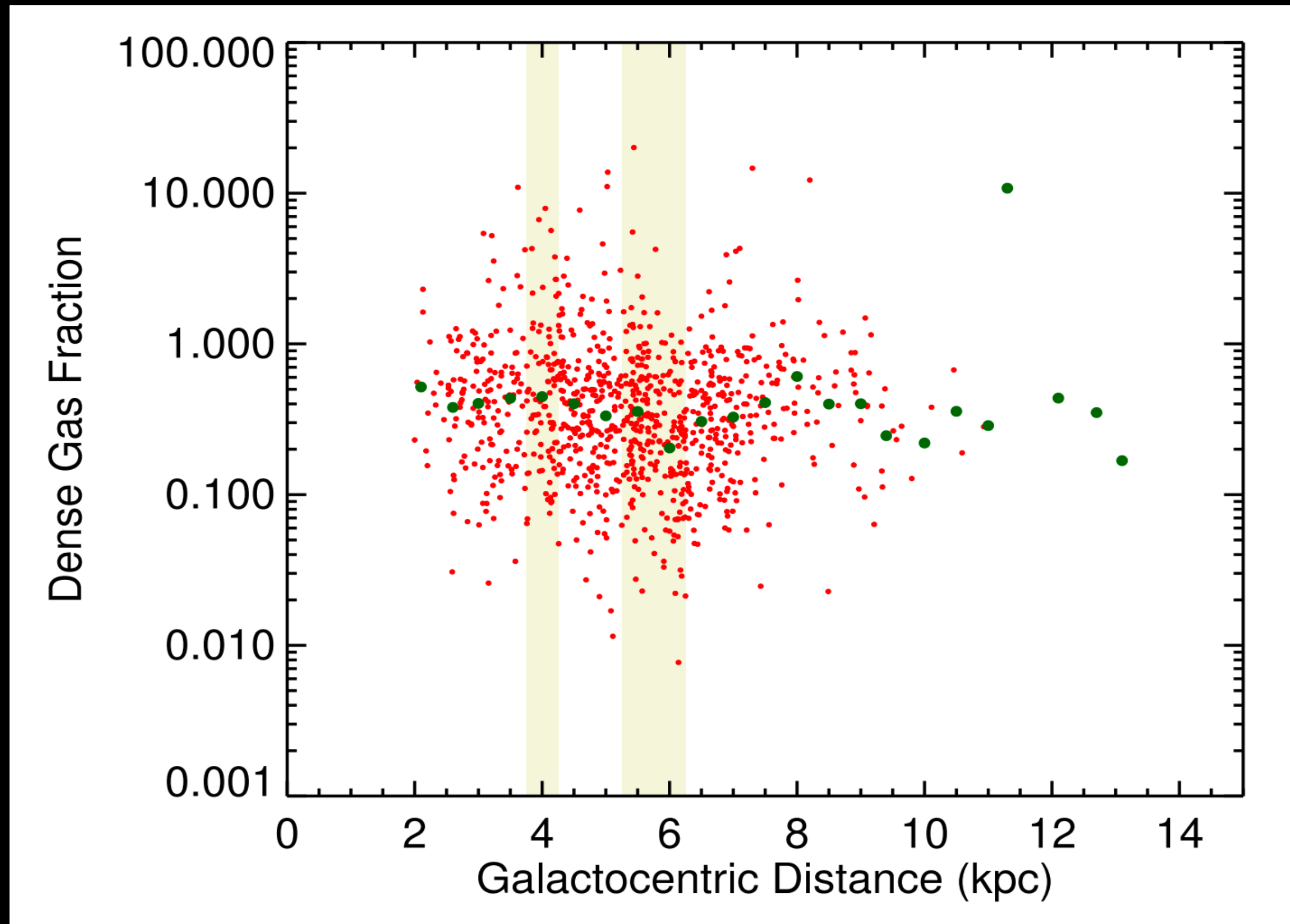


Eden+12

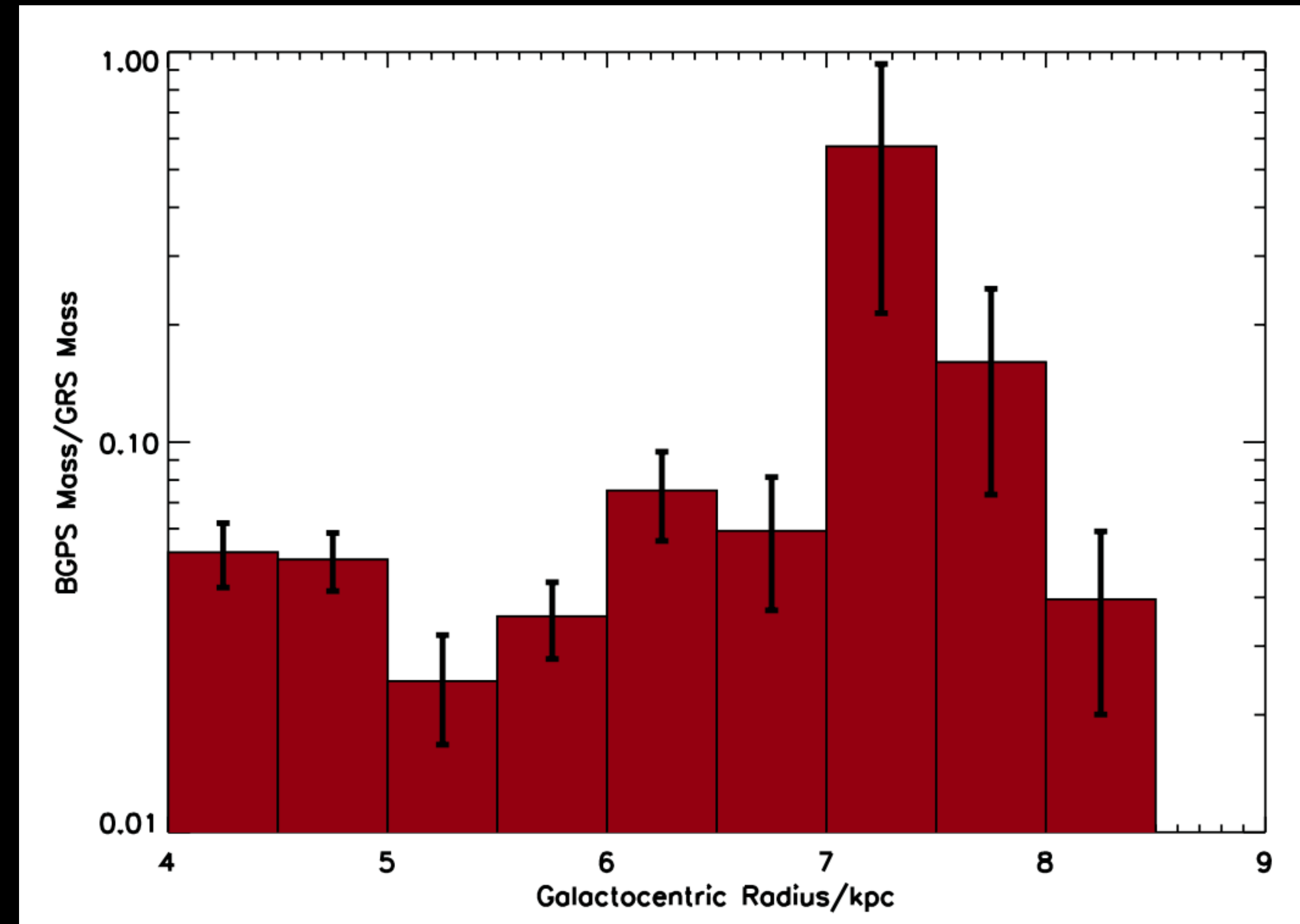


Urquhart+21

Previous Milky Way Results - CFE/DGMF

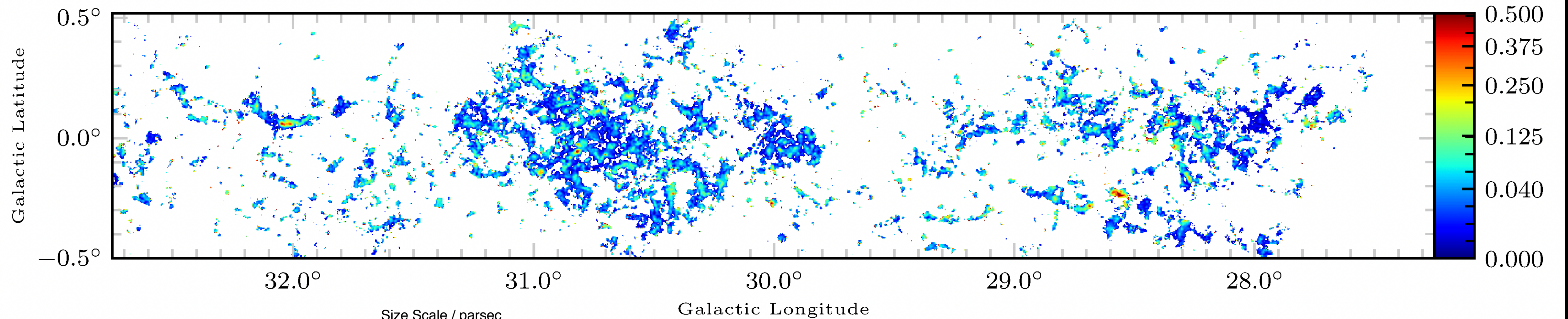


Urquhart+21

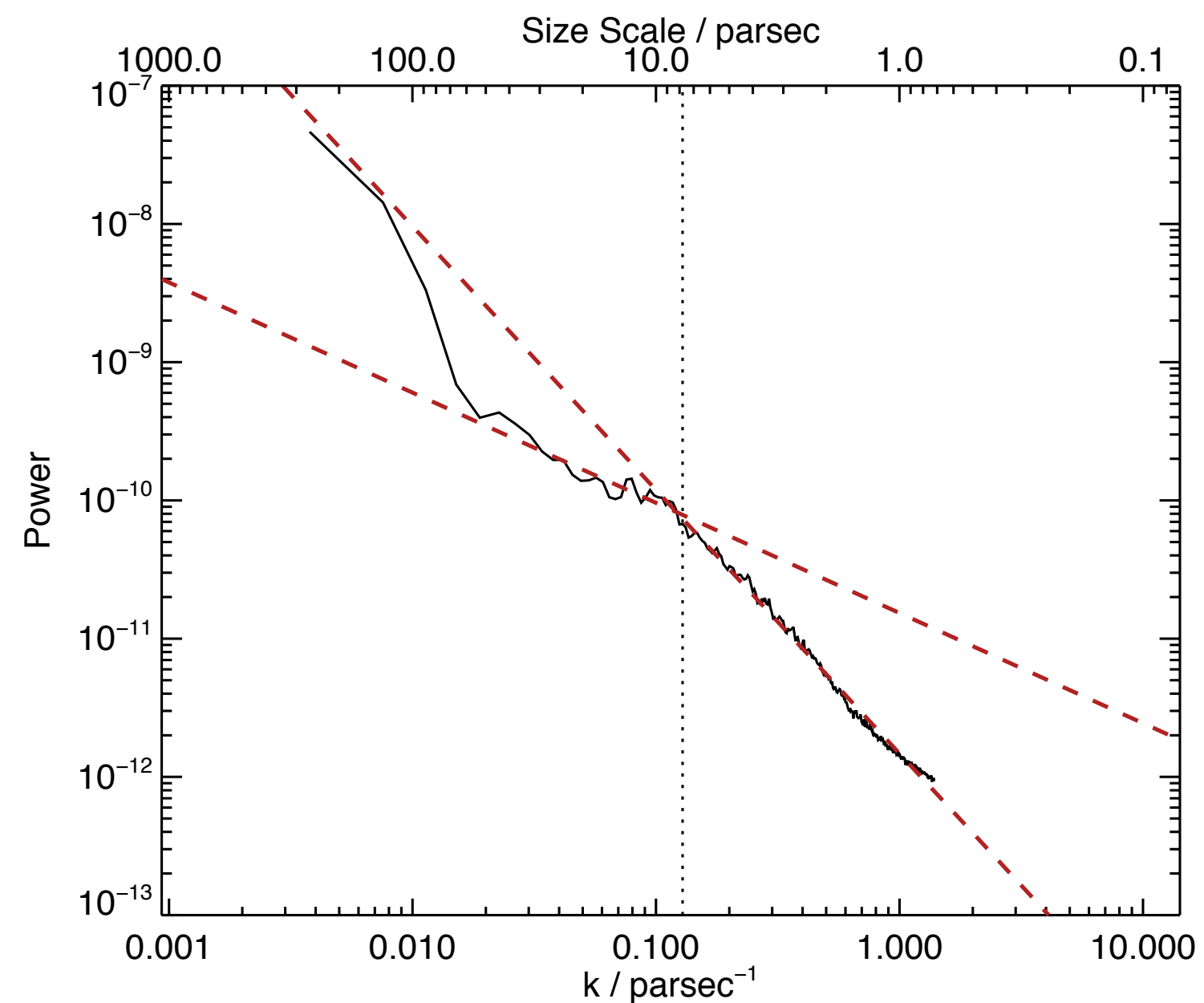


Eden+13

Previous Milky Way Results - CFE/DGMF

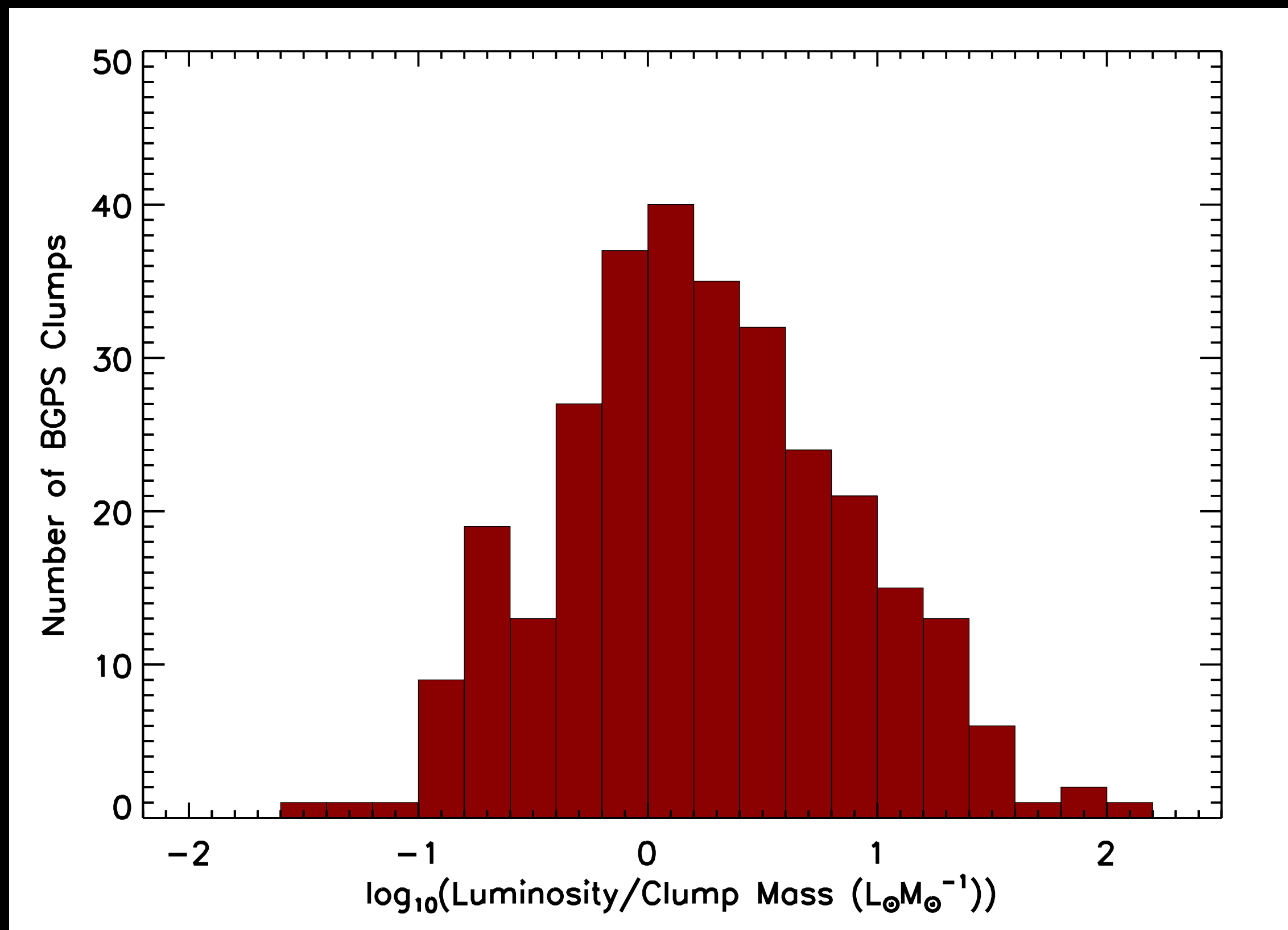


Eden+21

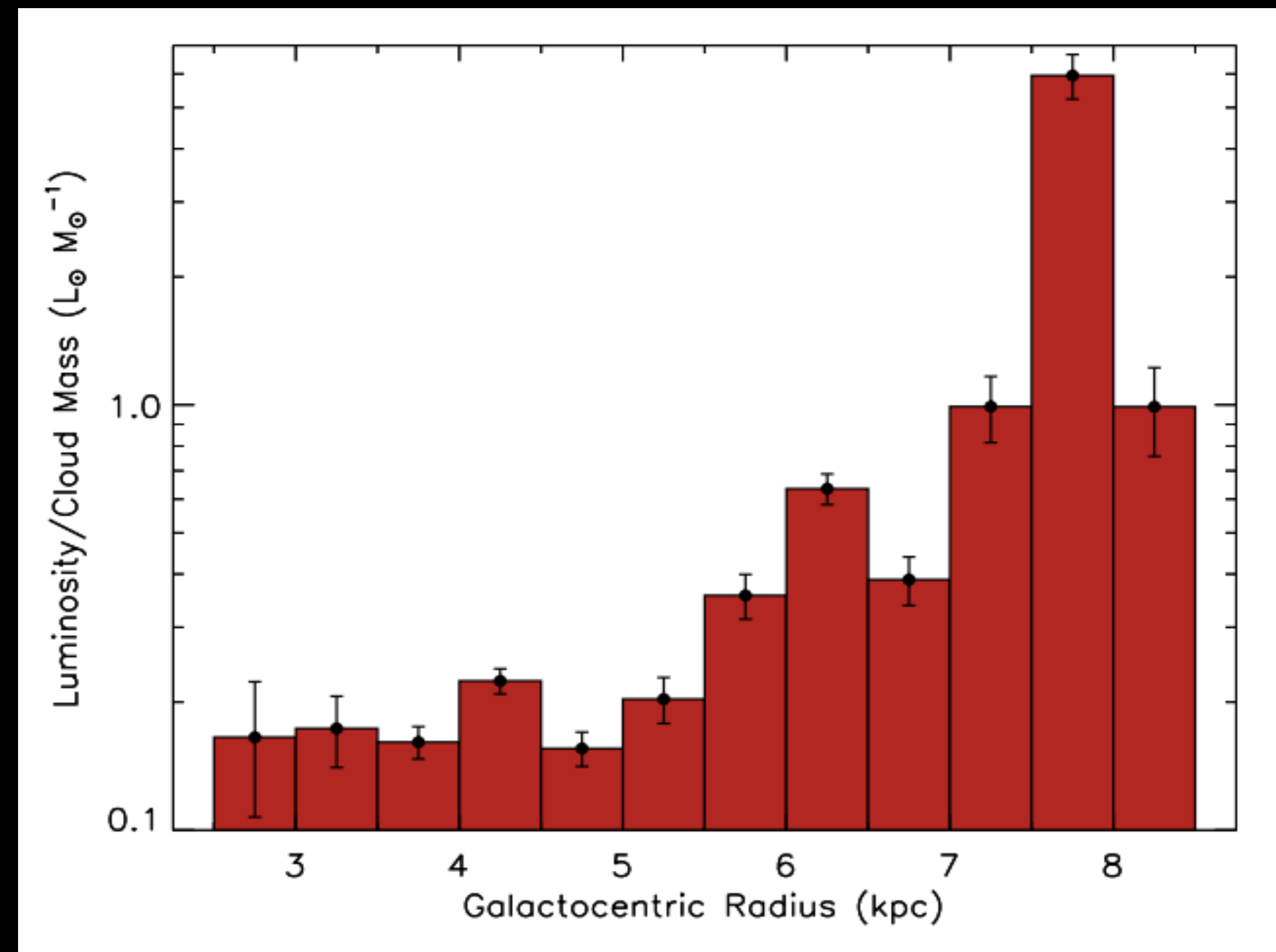


Break: 7.78 pc (5.74 - 11.5 pc)
Median Cloud Size: 10.1 pc

Previous Milky Way Results - SFE



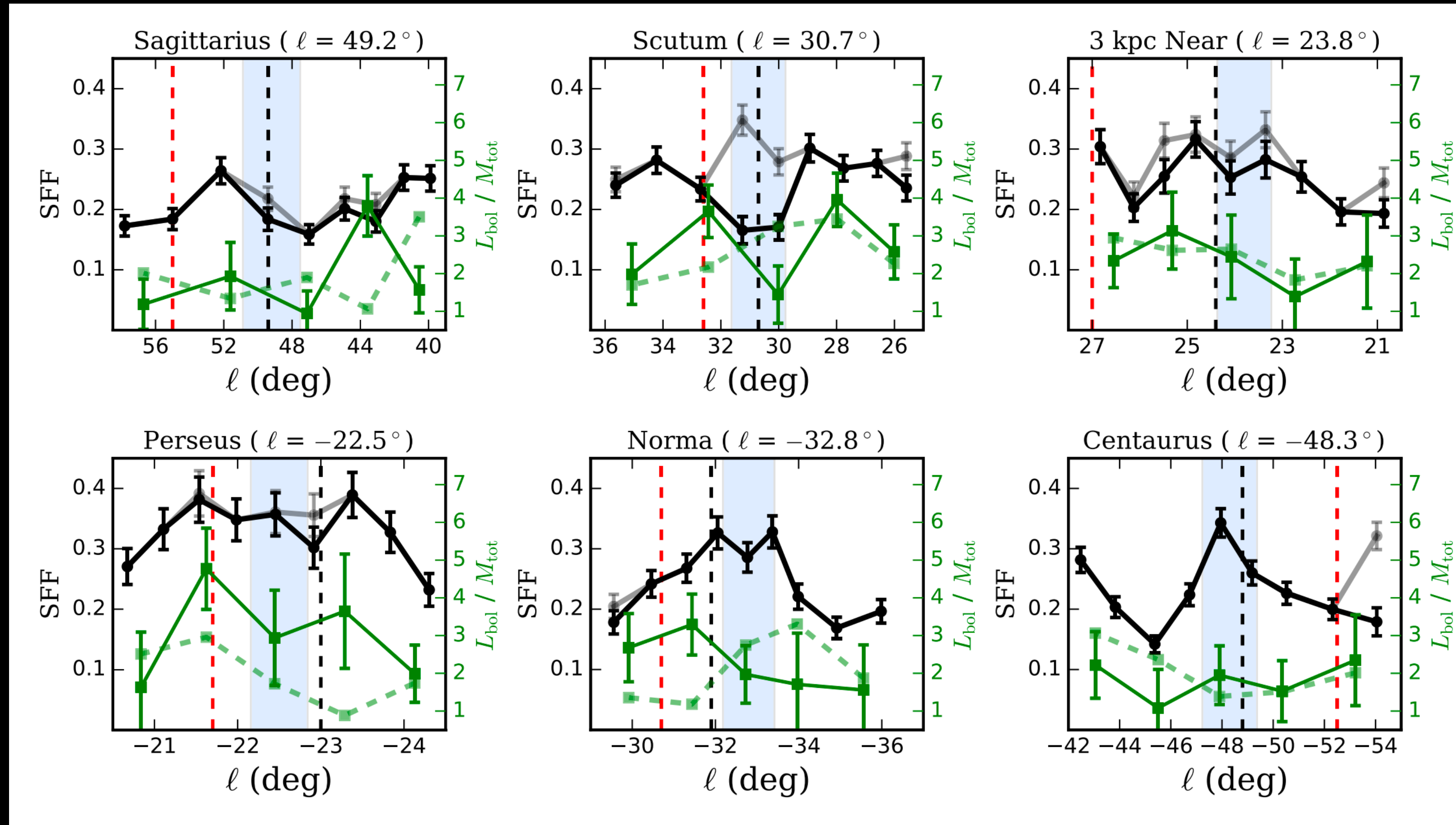
Eden+15



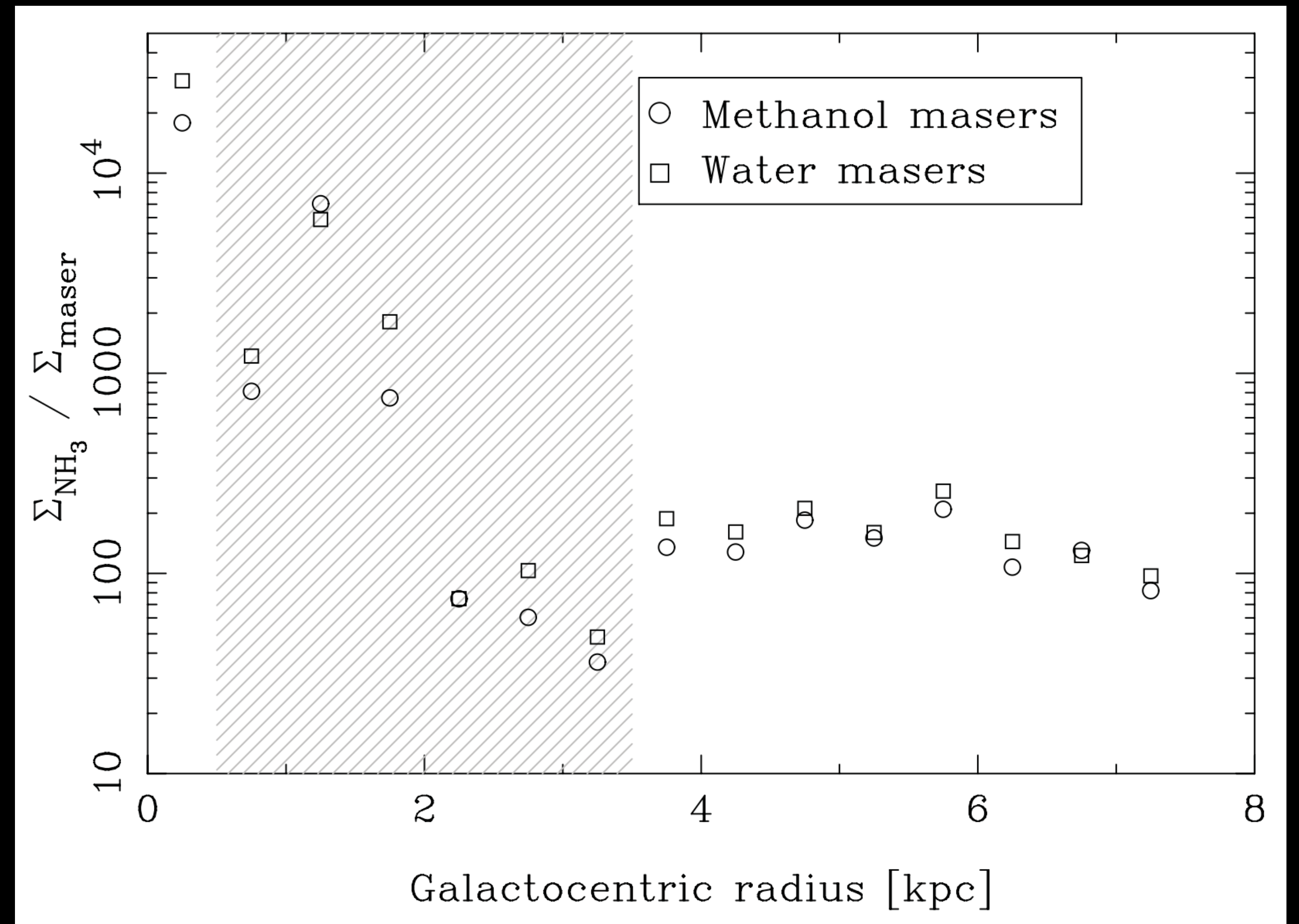
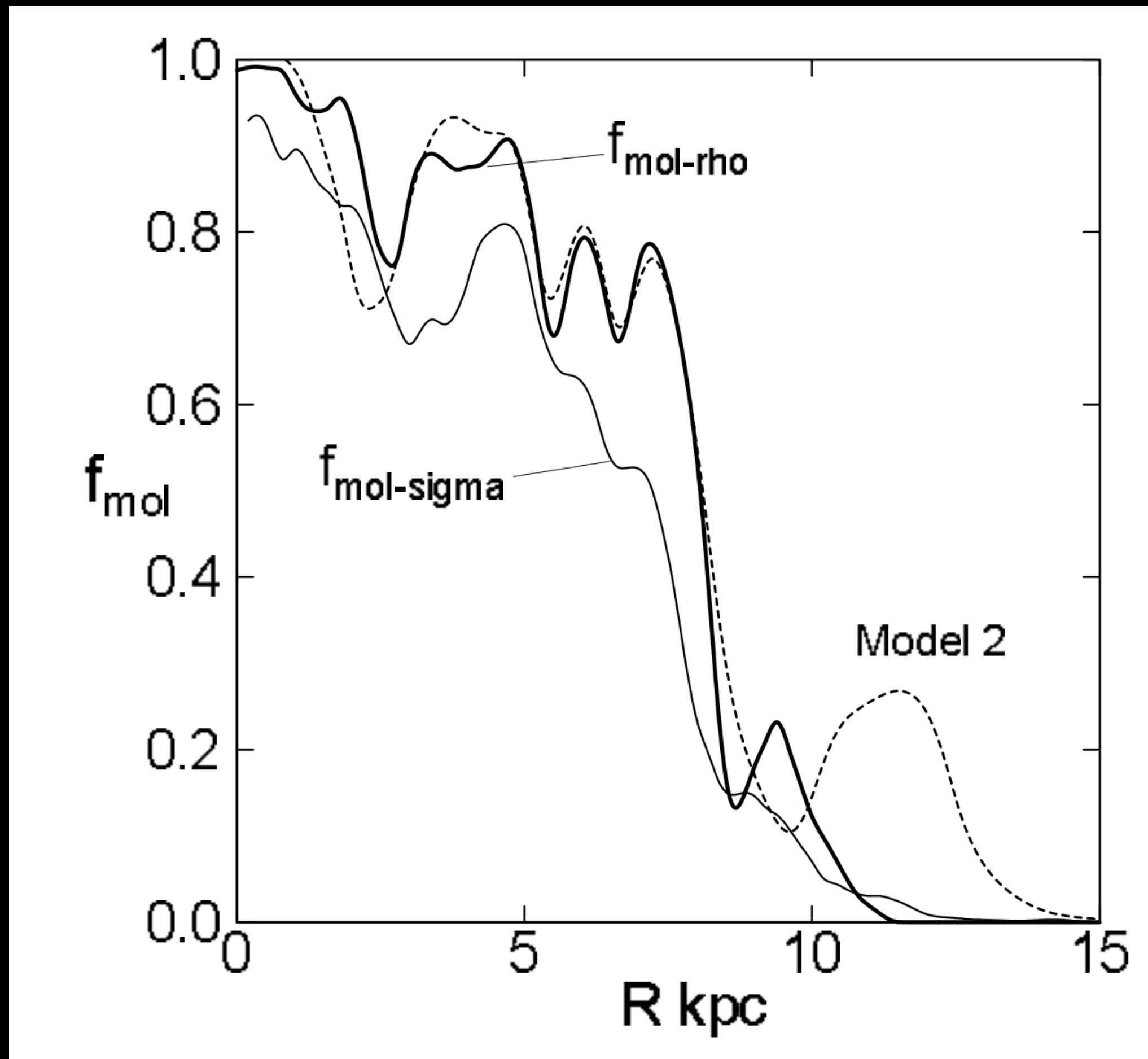
Moore+12

Previous Milky Way Results - SFE

Previous Milky Way Results - SFE



Galactic Scale Mechanisms



Previous JCMT CO Surveys

COHRS

^{12}CO

$\ell = 10^\circ - 56^\circ$

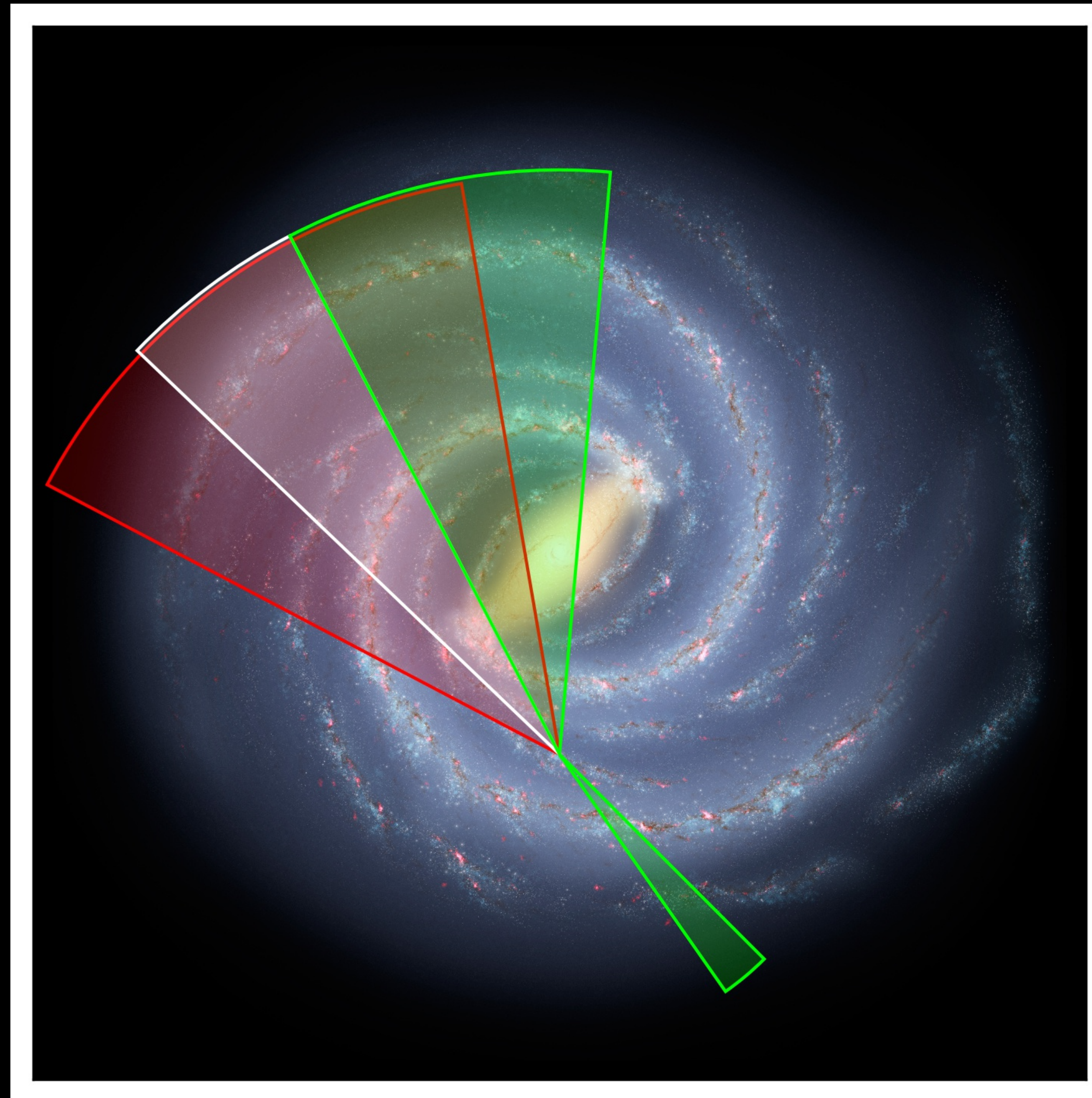
$b = \pm 0.5^\circ$

CHIMPS

$^{13}\text{CO}/\text{C}^{18}\text{O}$

$\ell = 28^\circ - 46^\circ$

$b = \pm 0.5^\circ$



CHIMPS2: CMZ

$^{12}\text{CO}/^{13}\text{CO}/\text{C}^{18}\text{O}$

$\ell = \pm 5^\circ$

$b = \pm 0.5^\circ$

CHIMPS2: Inner Galaxy

$^{13}\text{CO}/\text{C}^{18}\text{O}$

$\ell = 5^\circ - 28^\circ$

$b = \pm 0.5^\circ$

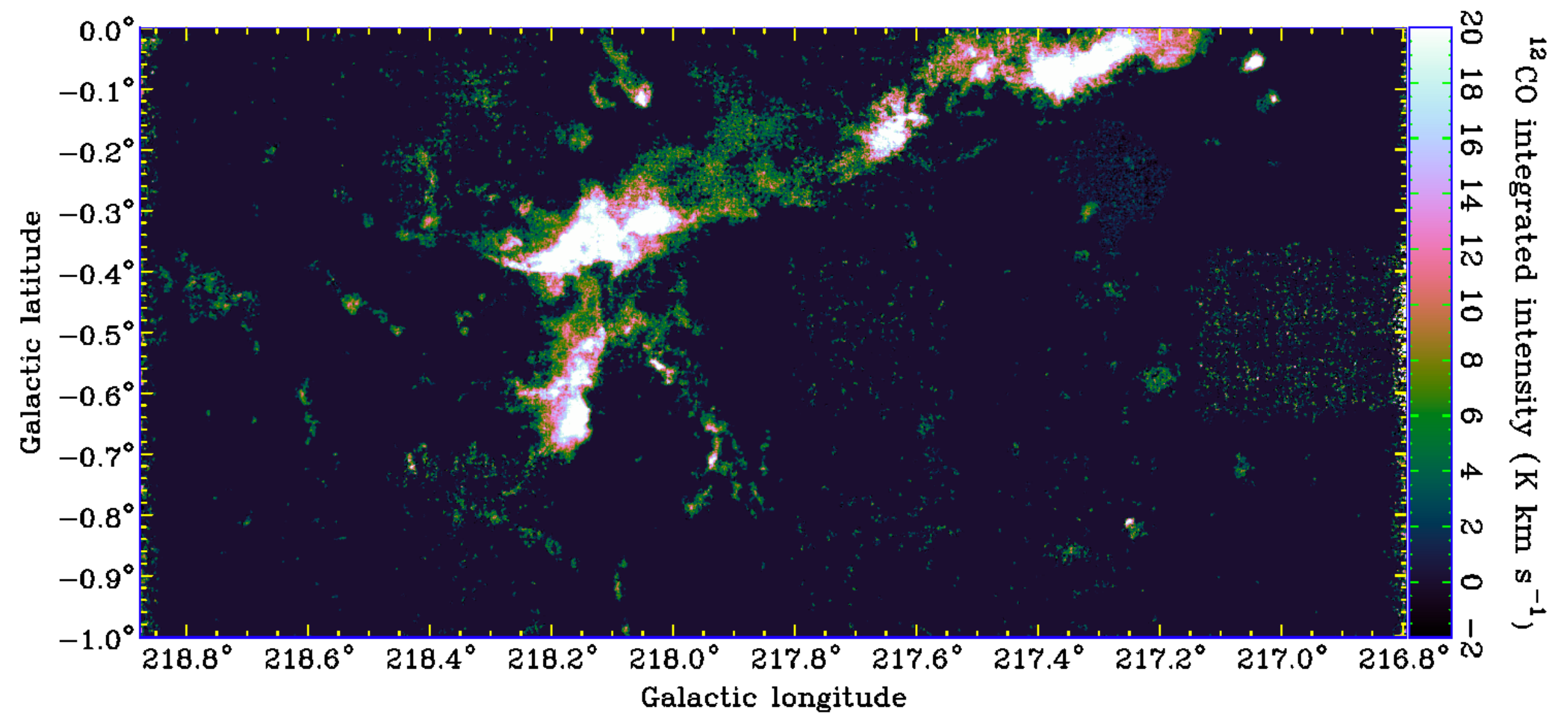
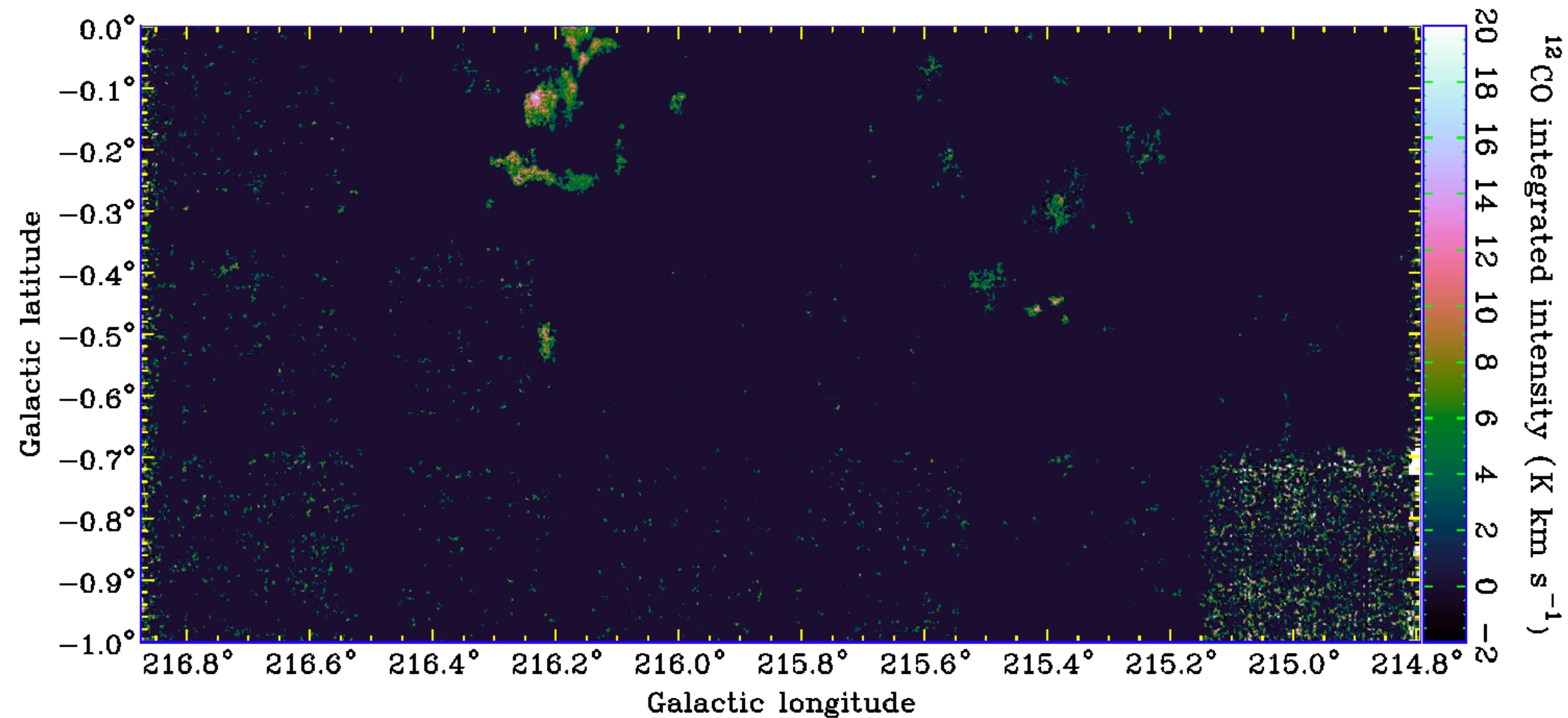
CHIMPS2: Outer Galaxy

$^{12}\text{CO}/^{13}\text{CO}/\text{C}^{18}\text{O}$

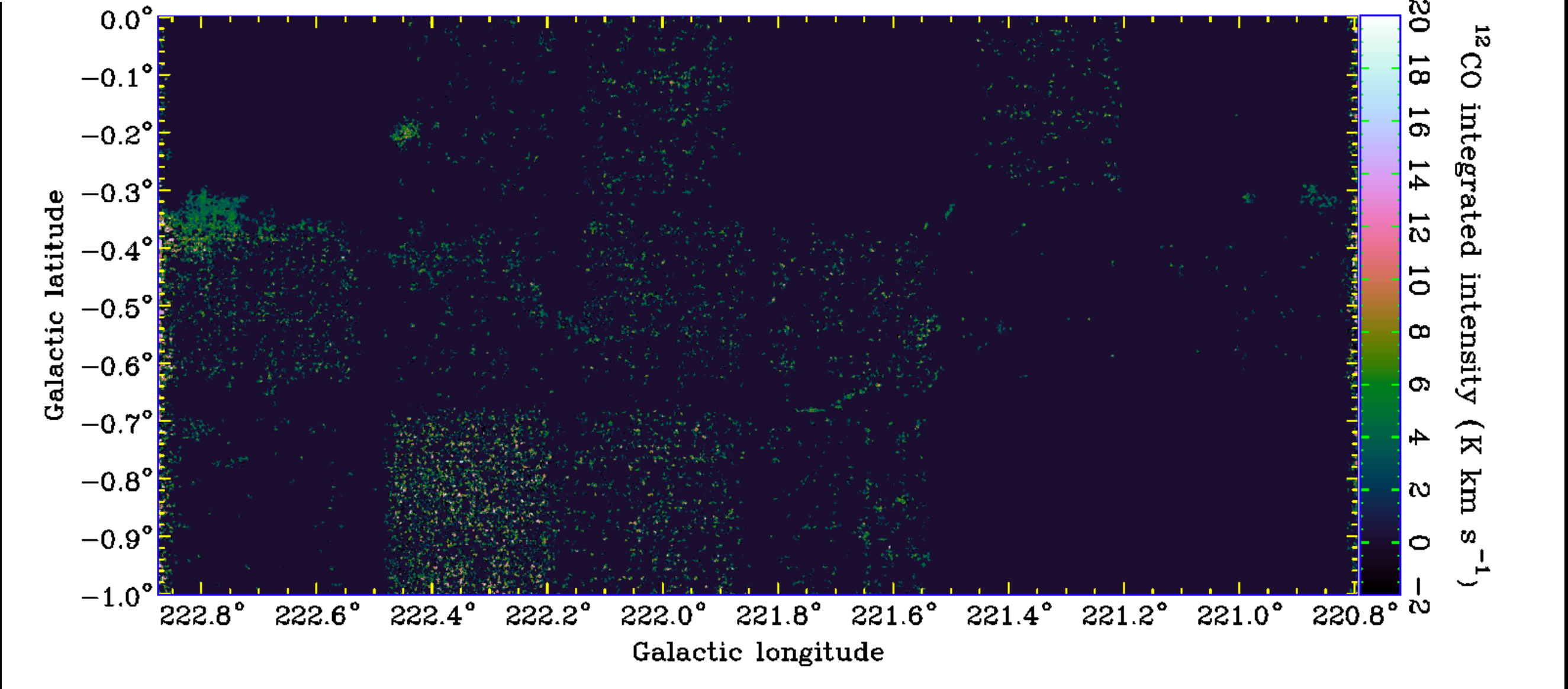
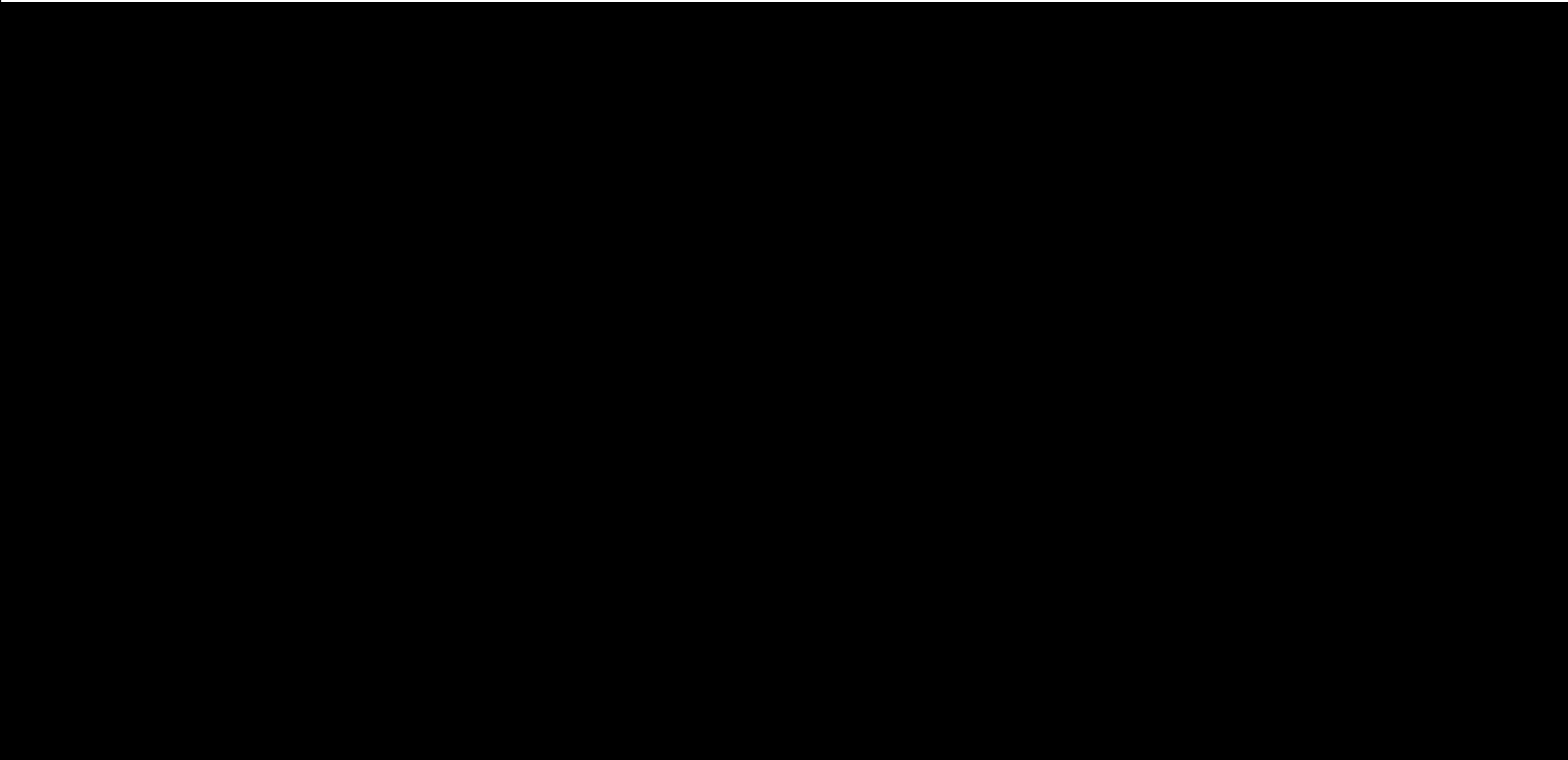
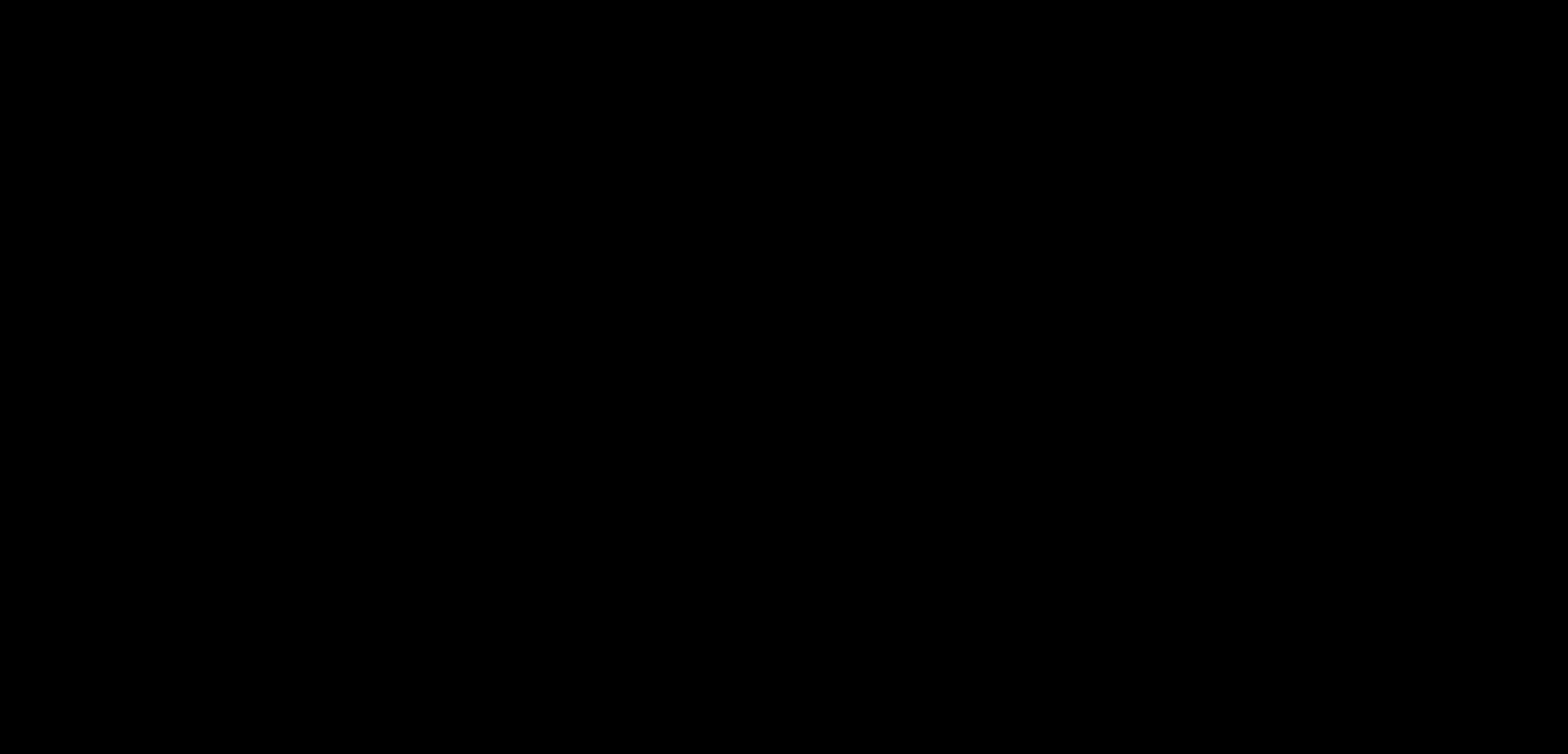
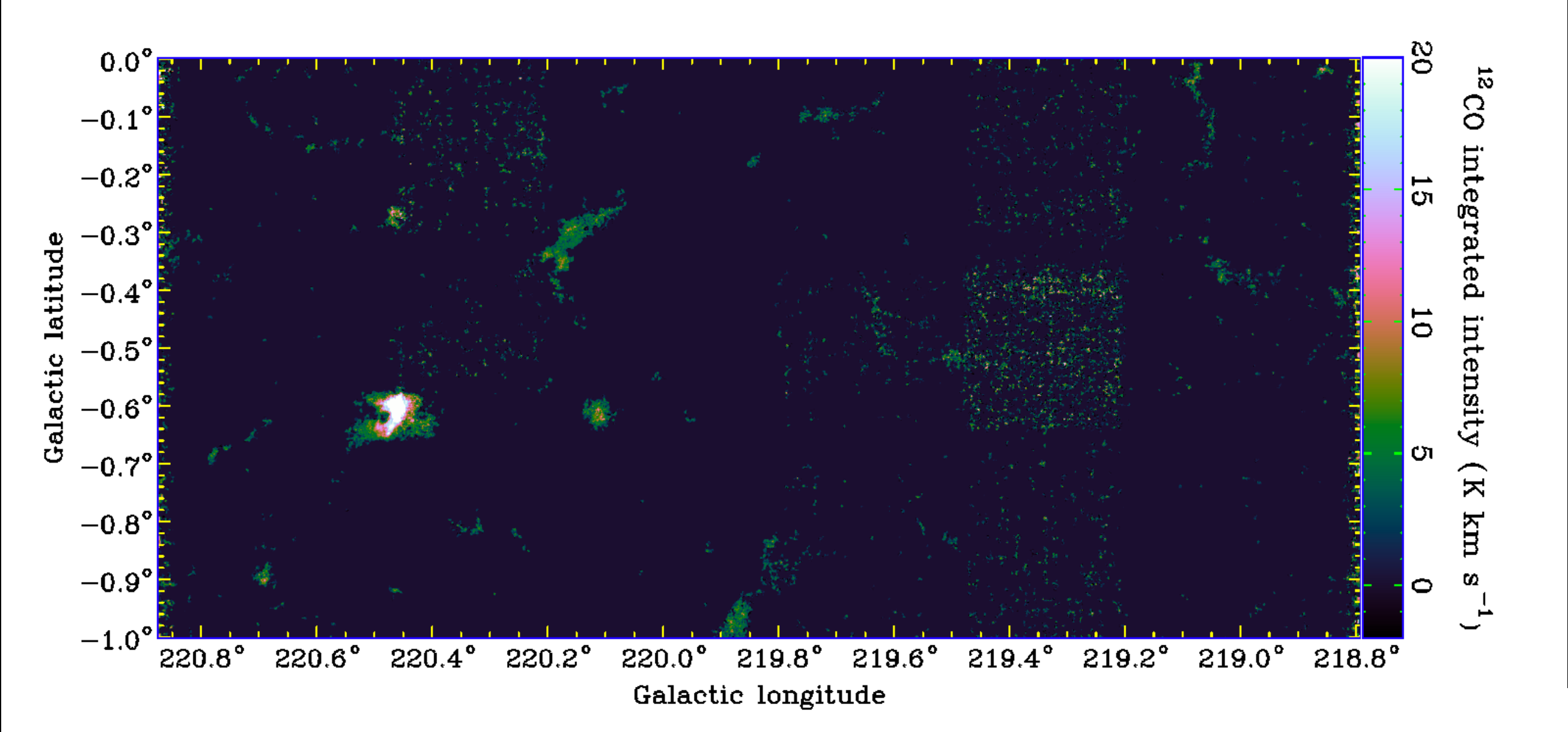
$\ell = 215^\circ - 225^\circ$

$b = -2^\circ - 0^\circ$

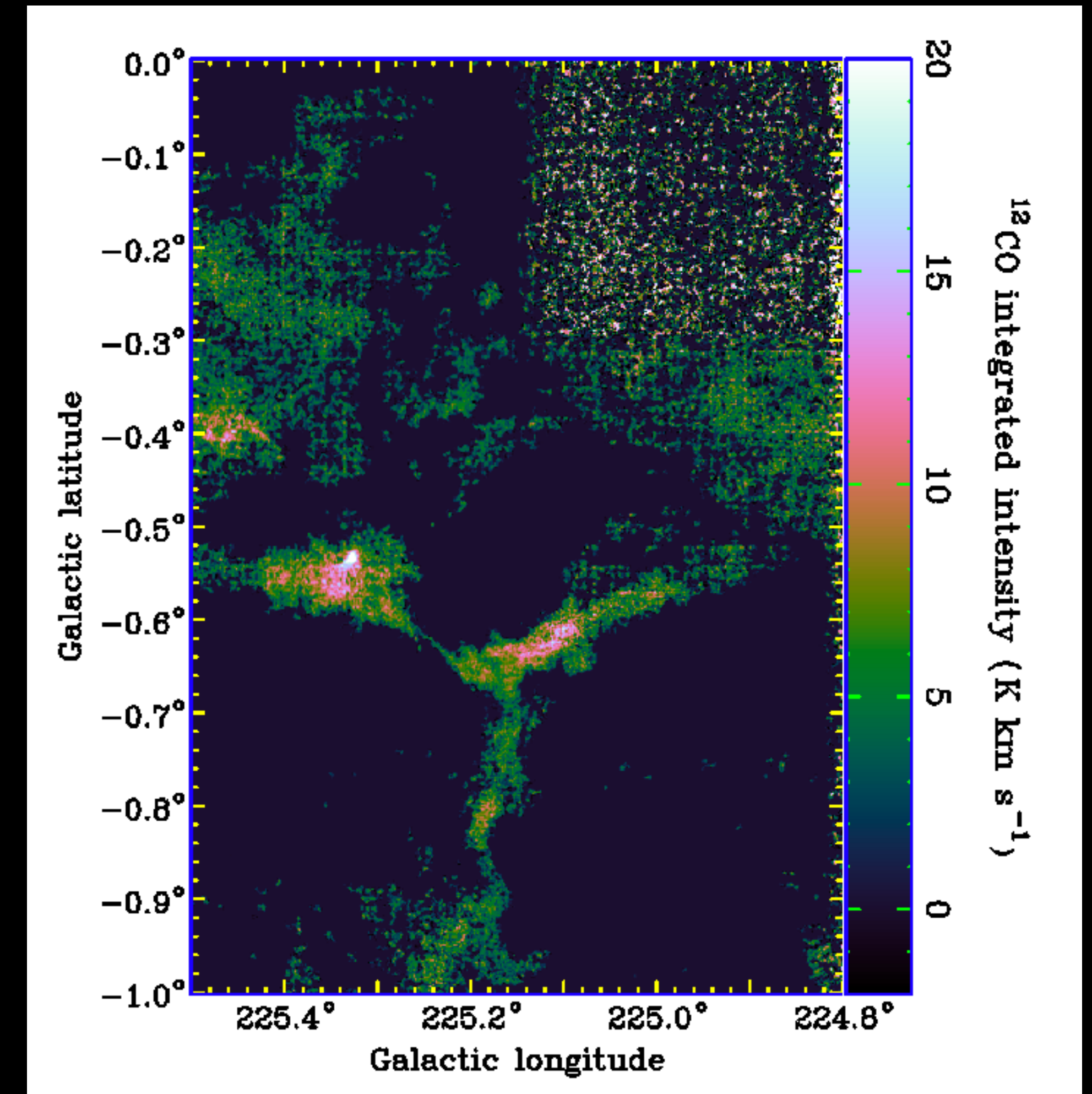
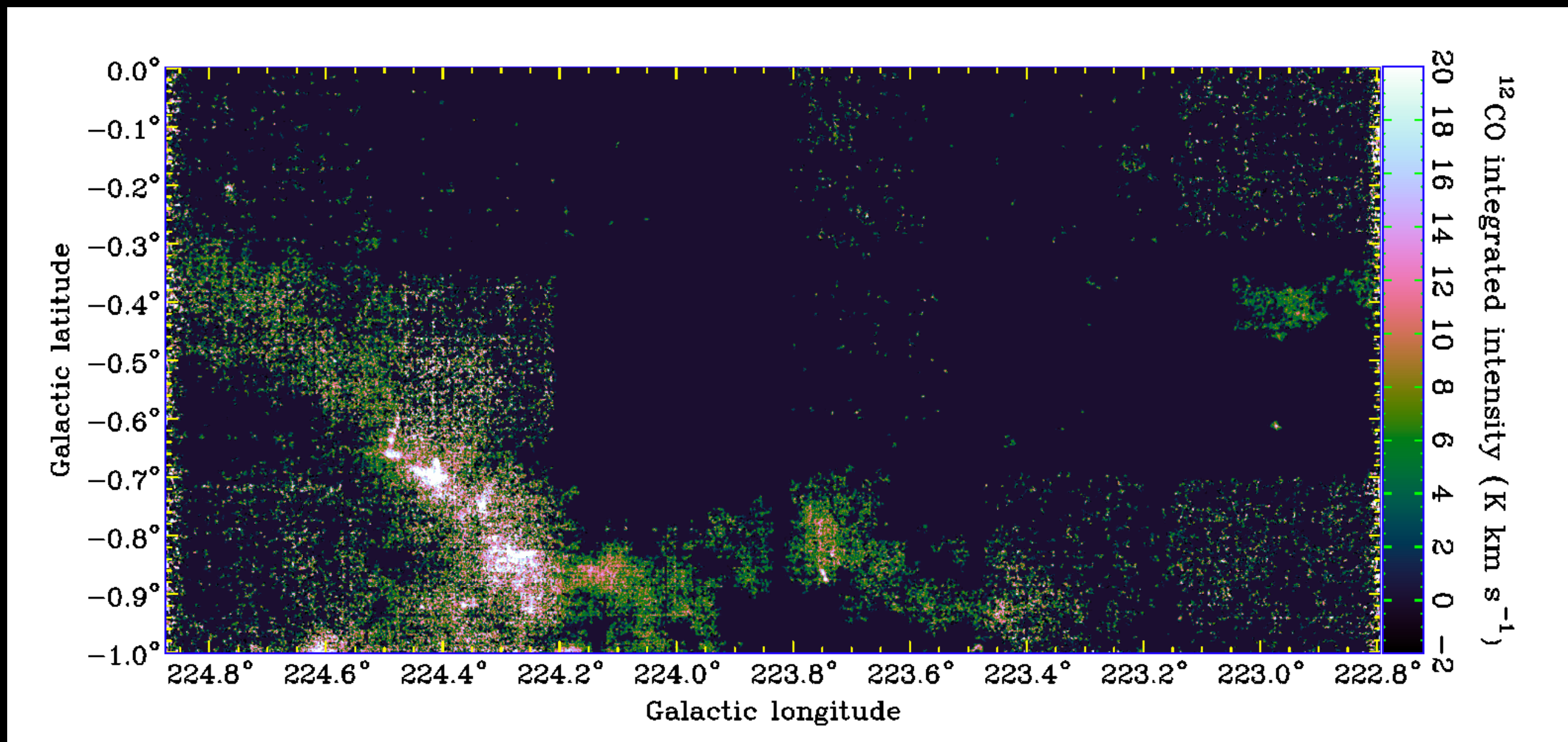
CHIMPS2 ^{12}CO Outer Galaxy Data



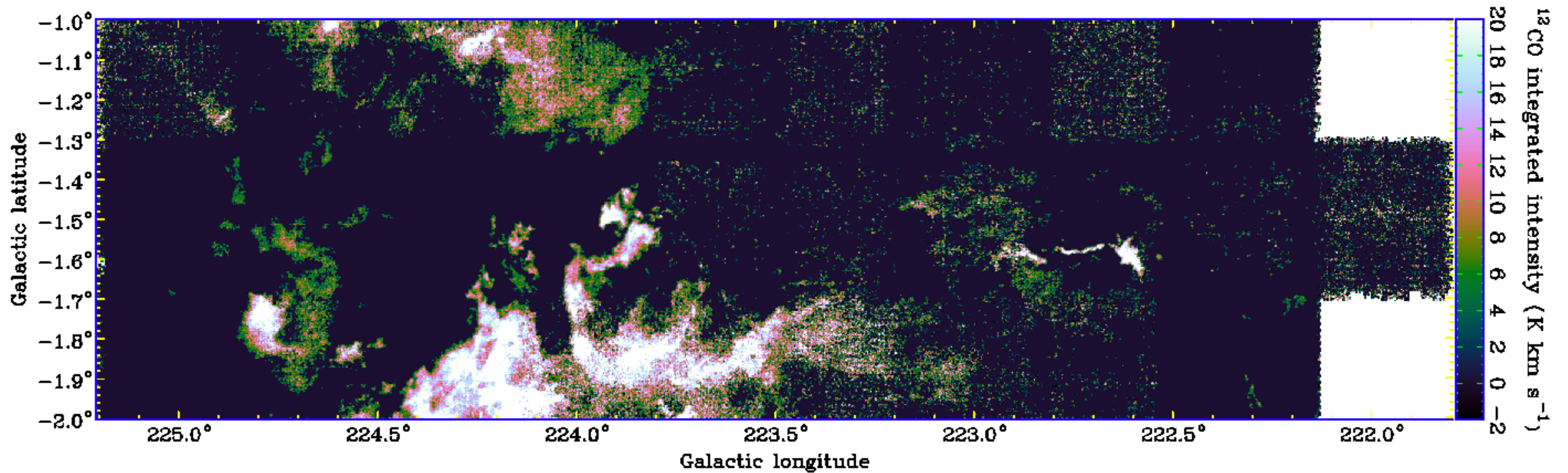
CHIMPS2 ^{12}CO Outer Galaxy Data



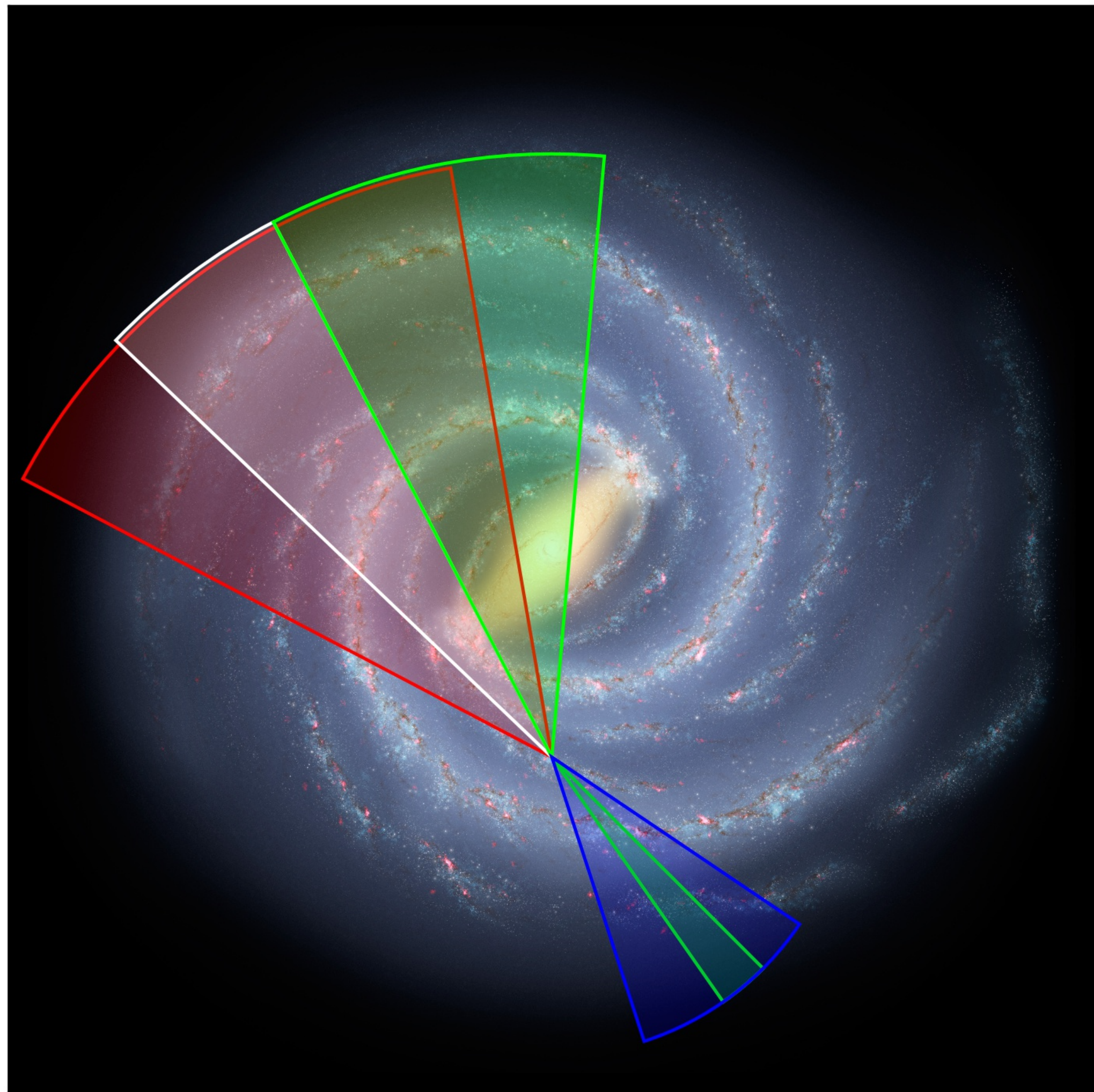
CHIMPS2 ^{12}CO Outer Galaxy Data



CHIMPS2 ^{12}CO Outer Galaxy Data



CLOGS

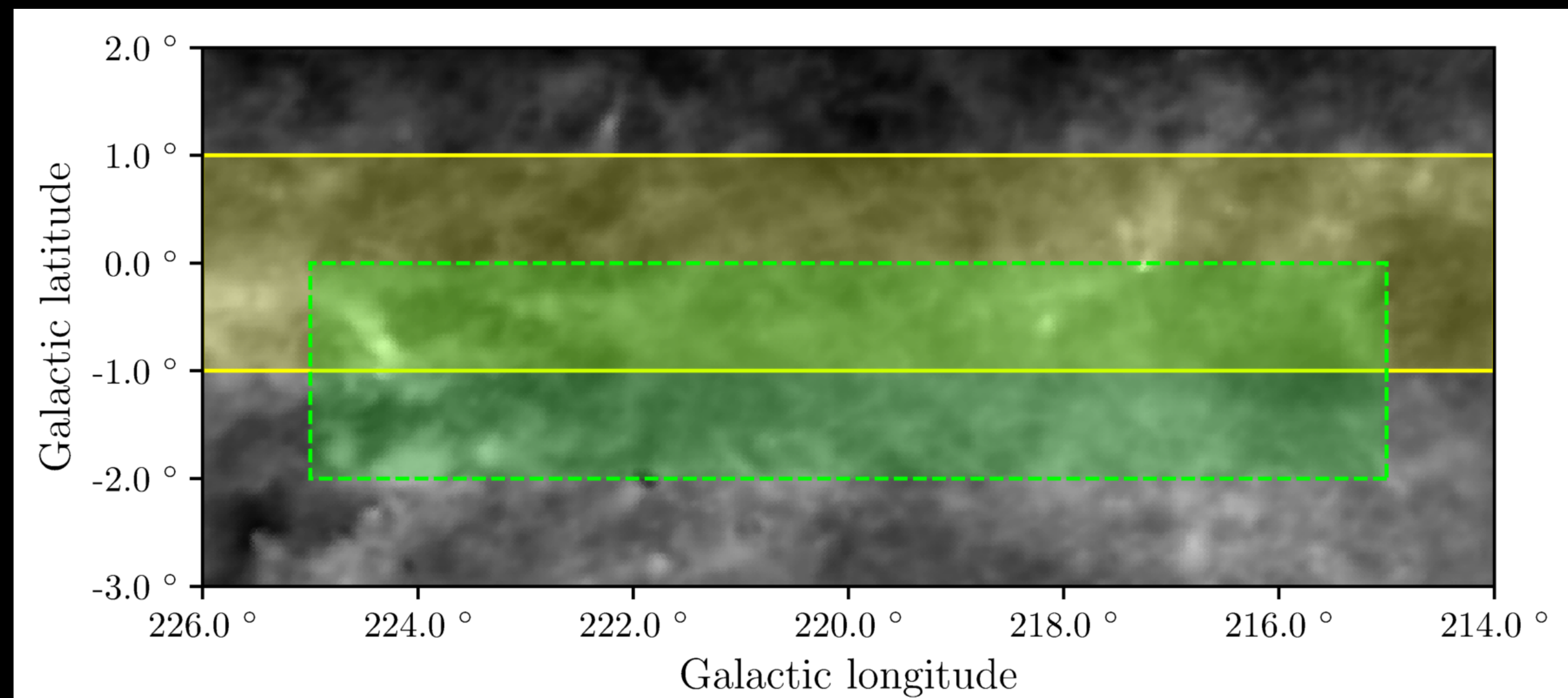
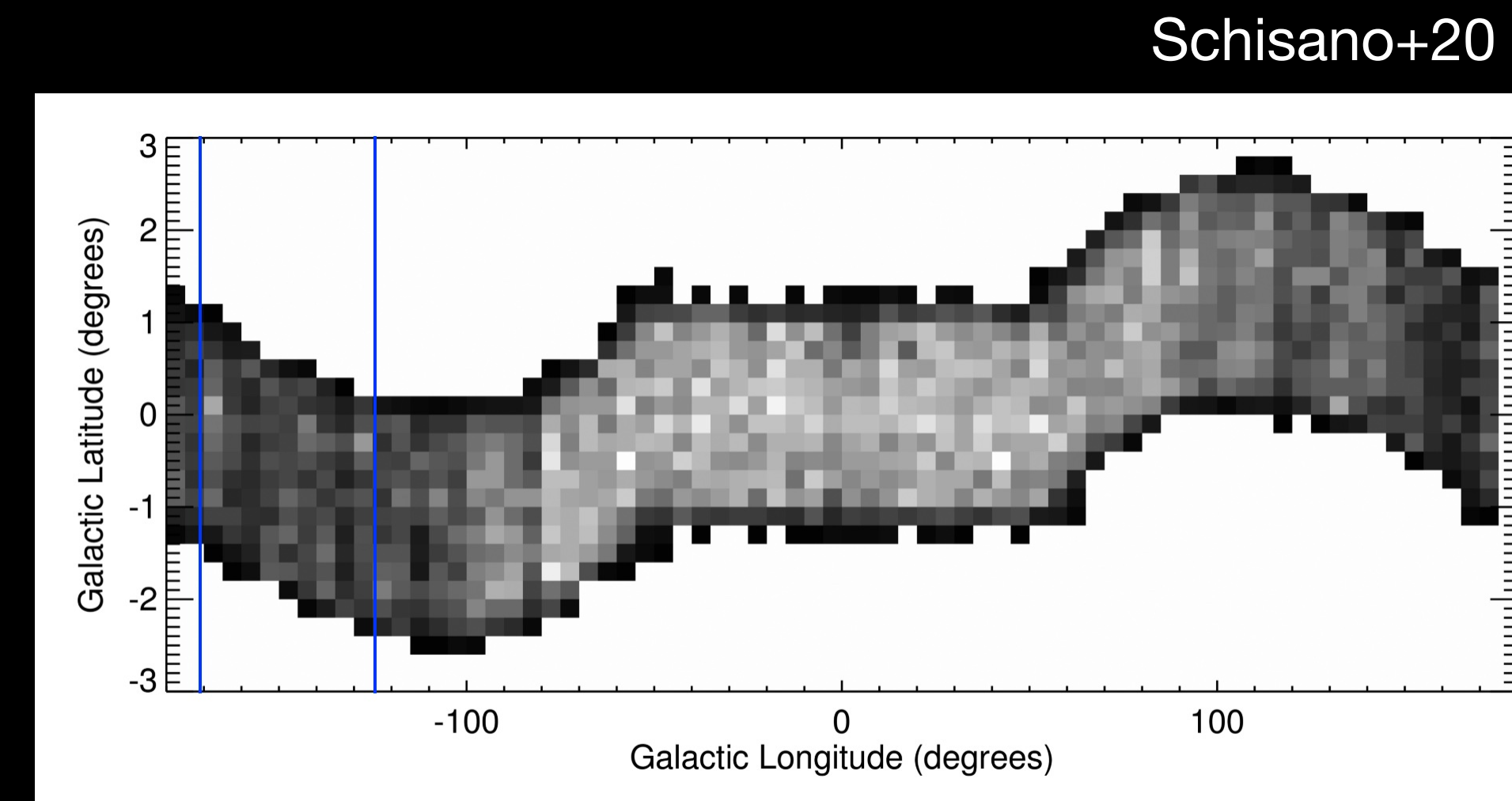


CLOGS

^{12}CO

$\ell = 198^\circ - 236^\circ$

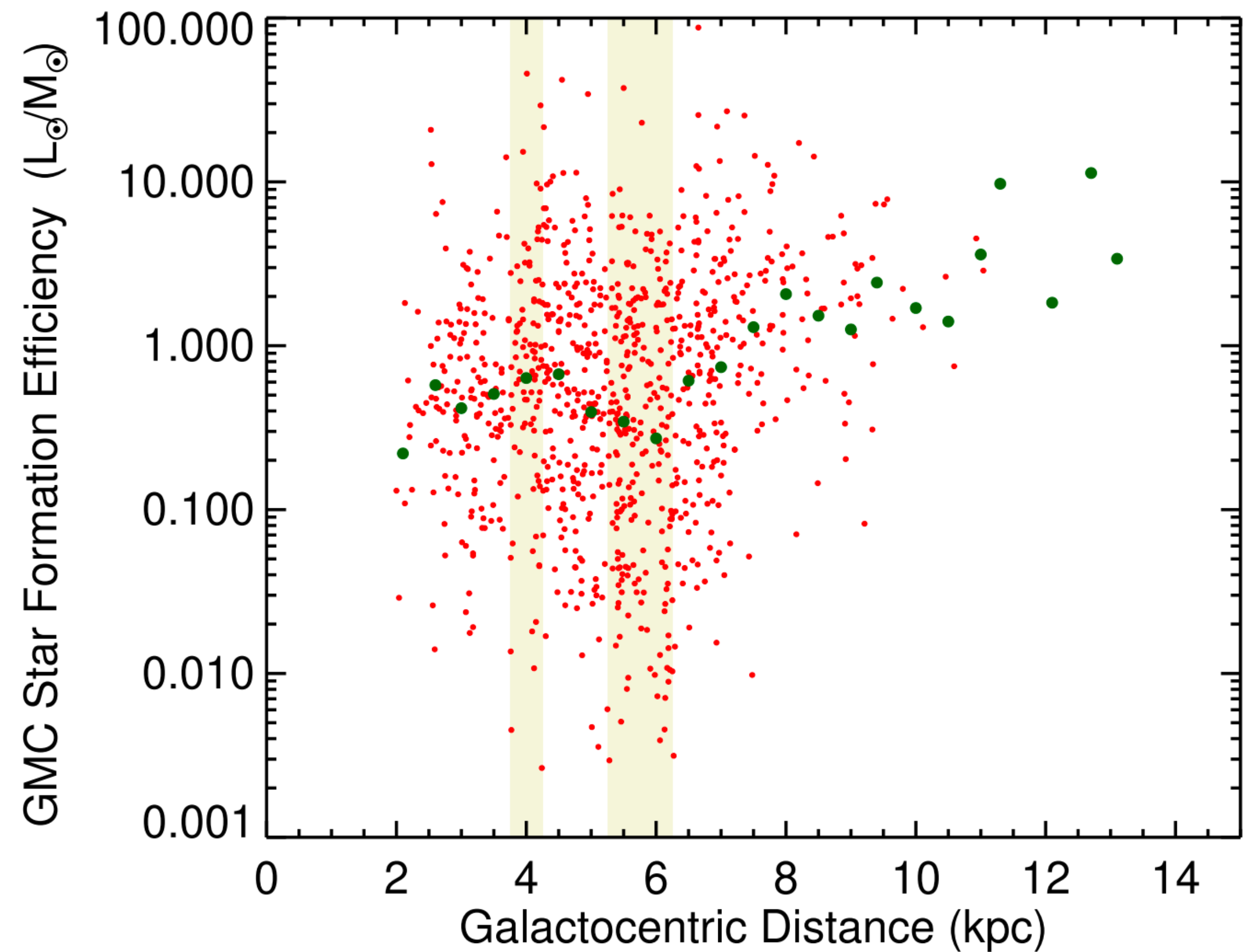
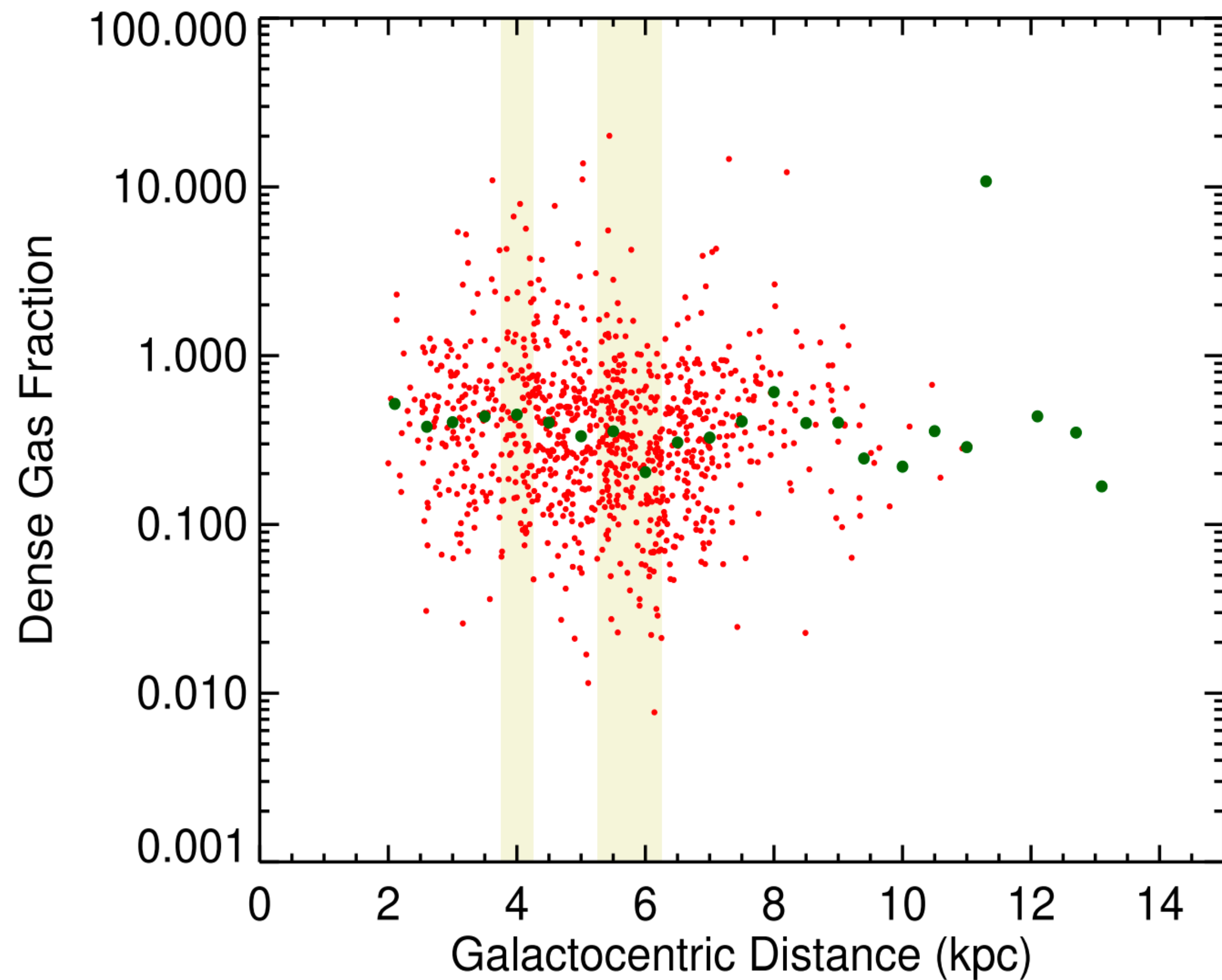
$b = -2^\circ - 0^\circ$



Eden+20

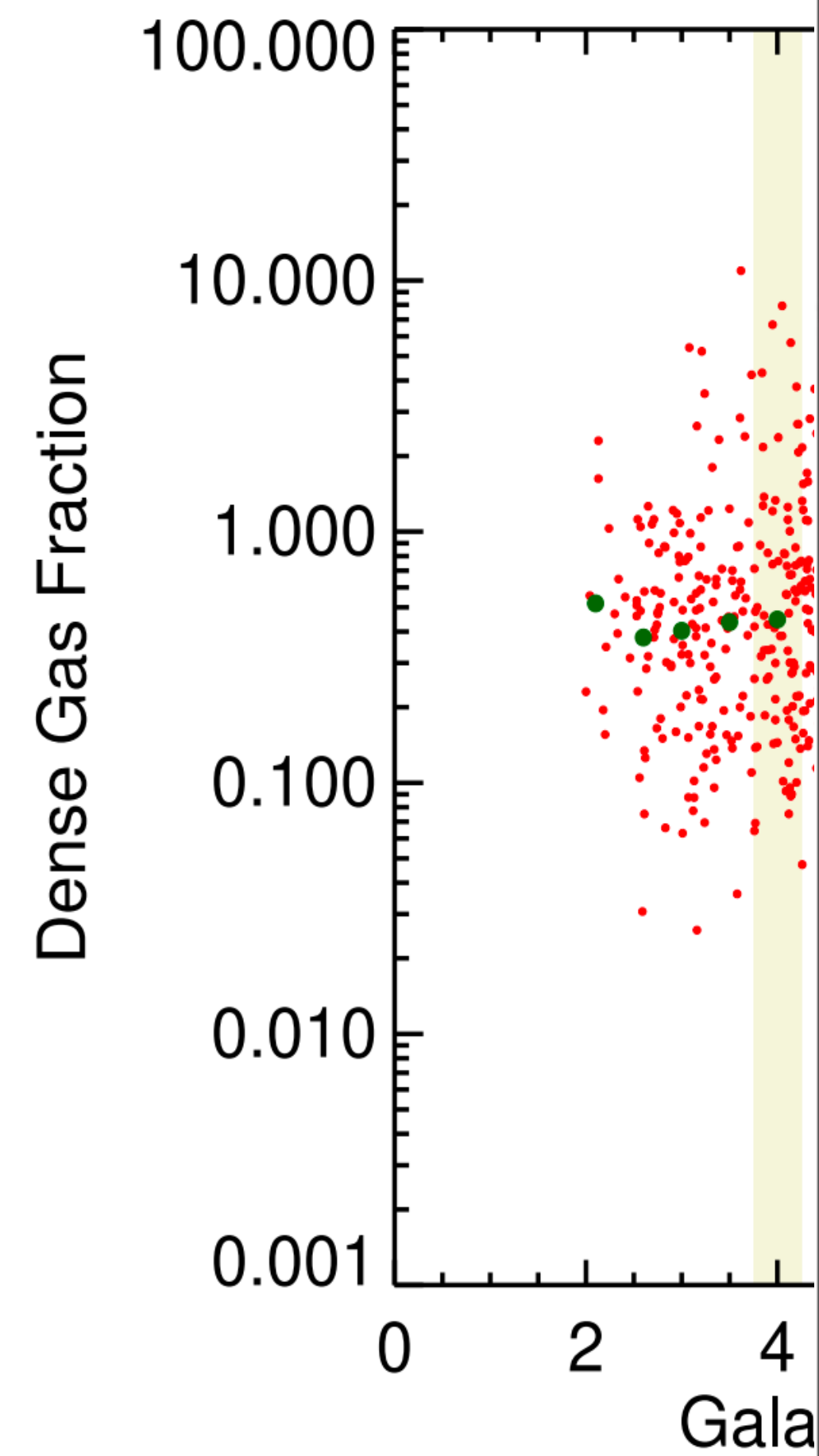
Science Goals

Star Formation in the Outer Galaxy

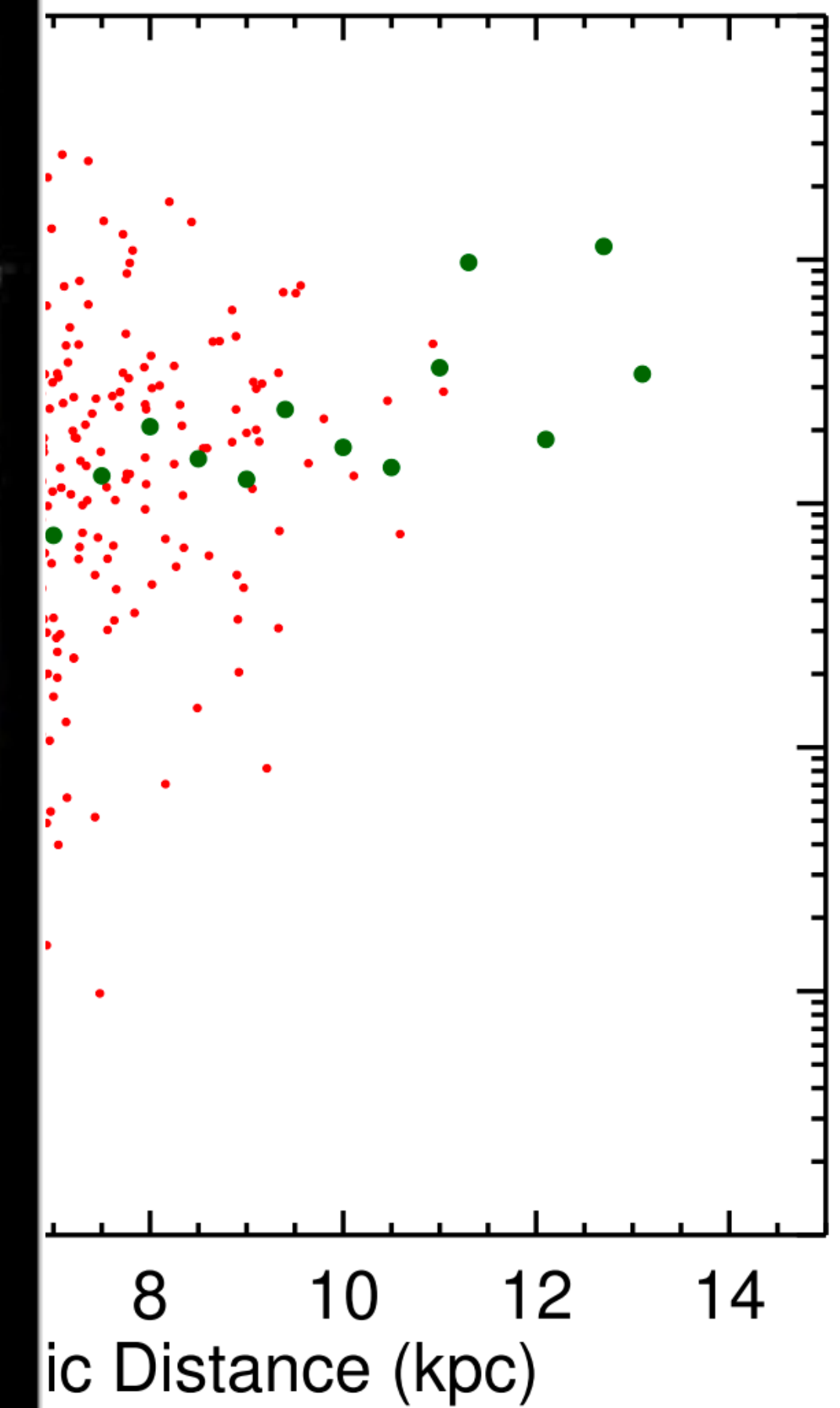
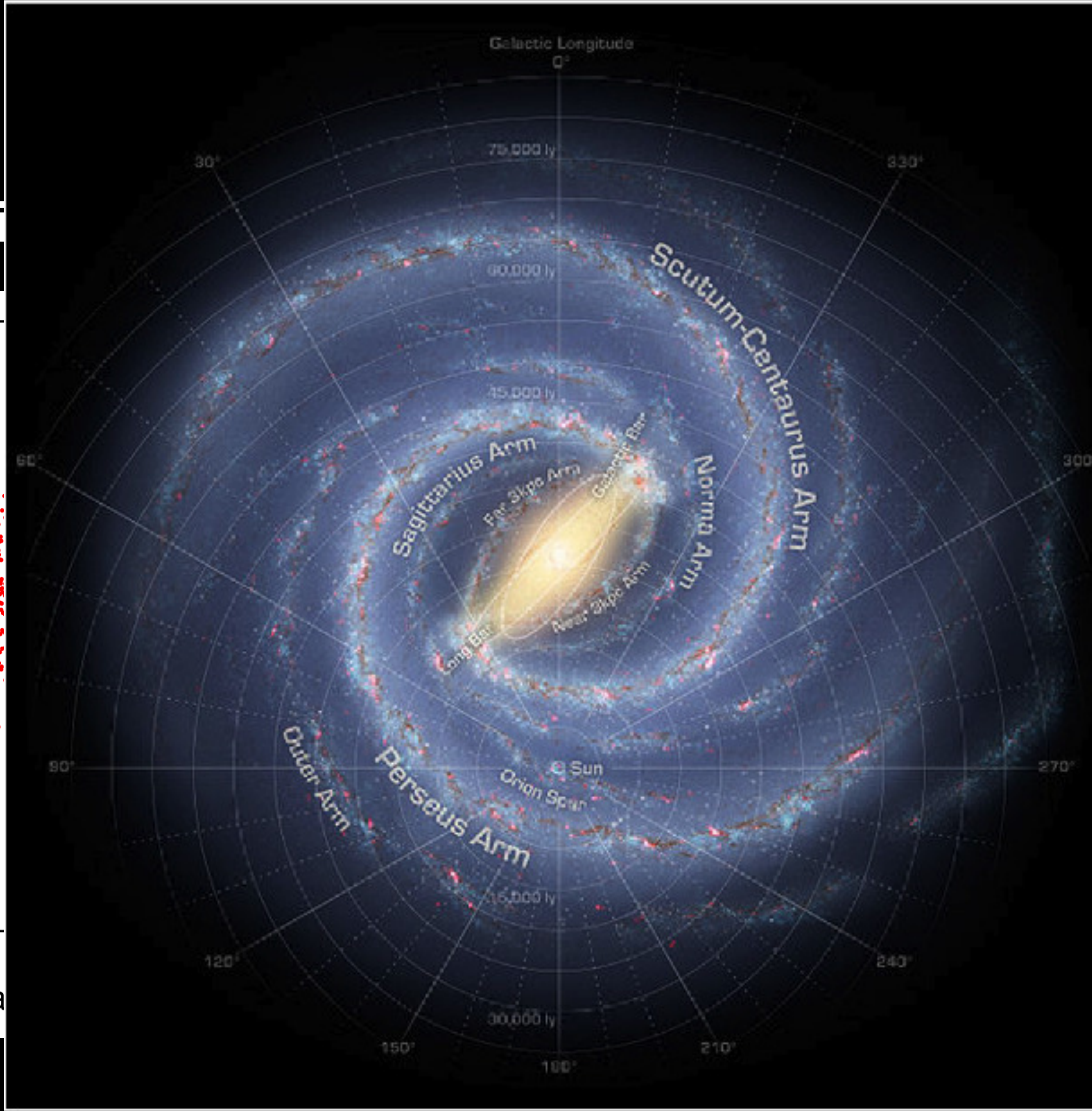


Science

Star Formation



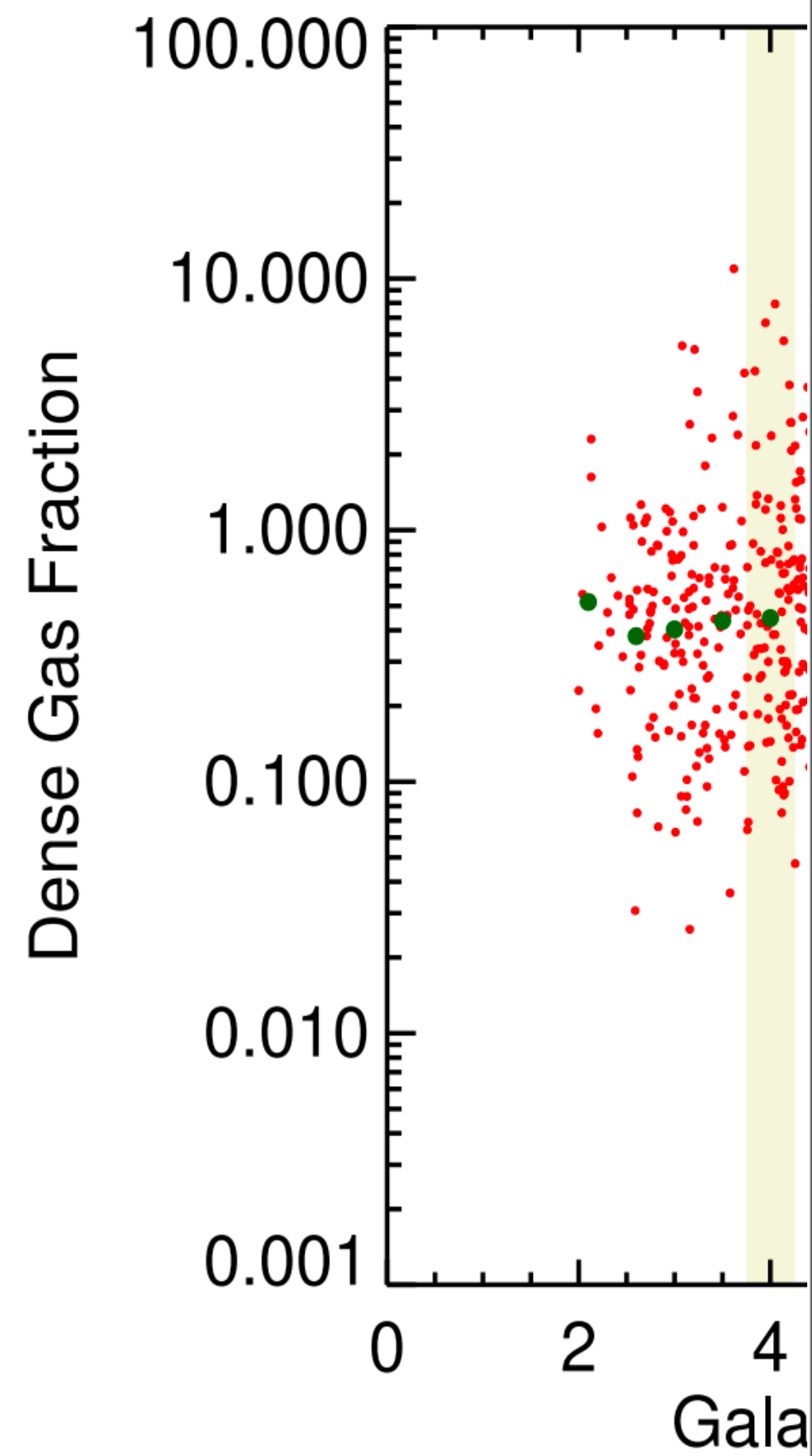
Urquhart+21



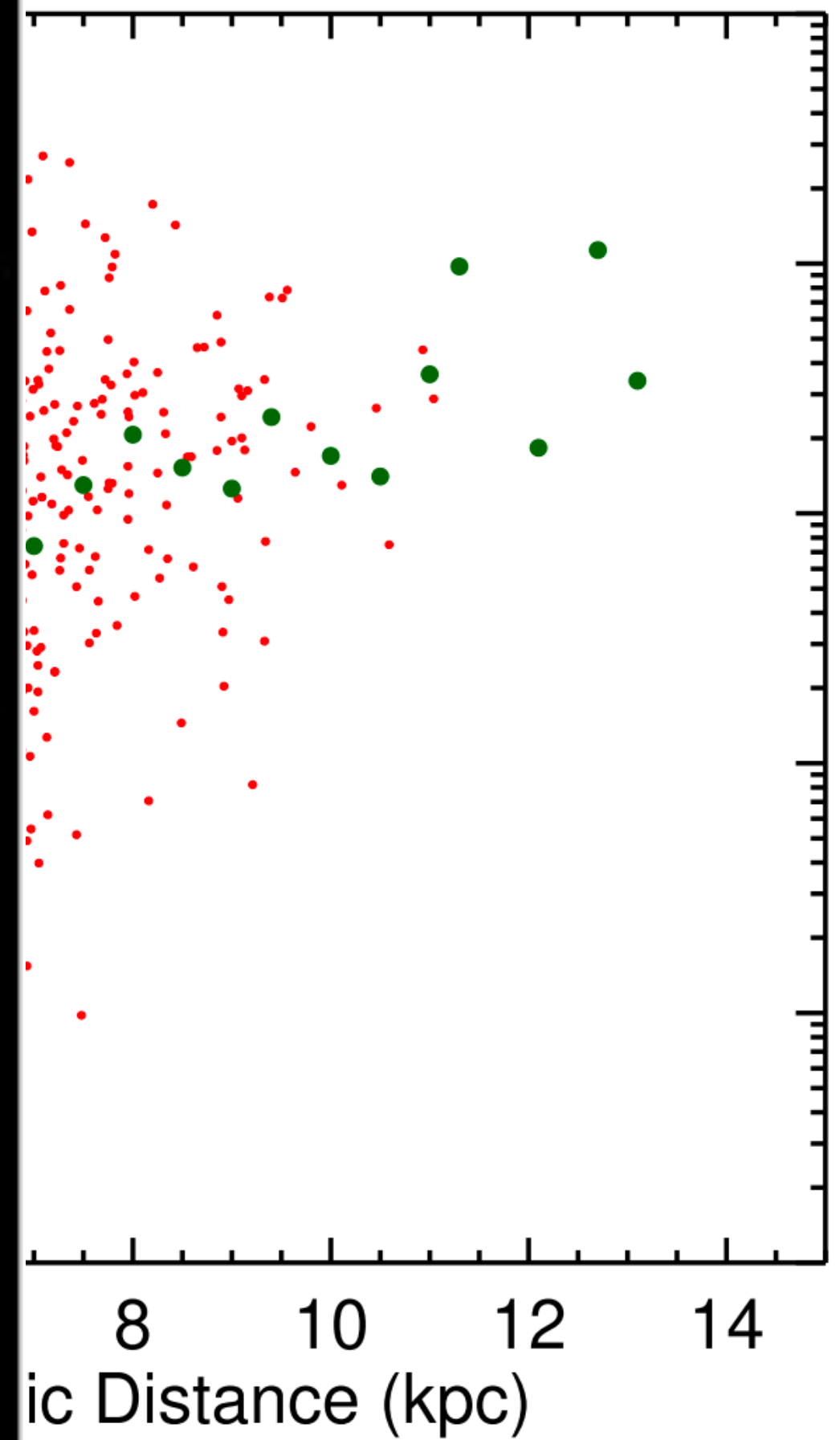
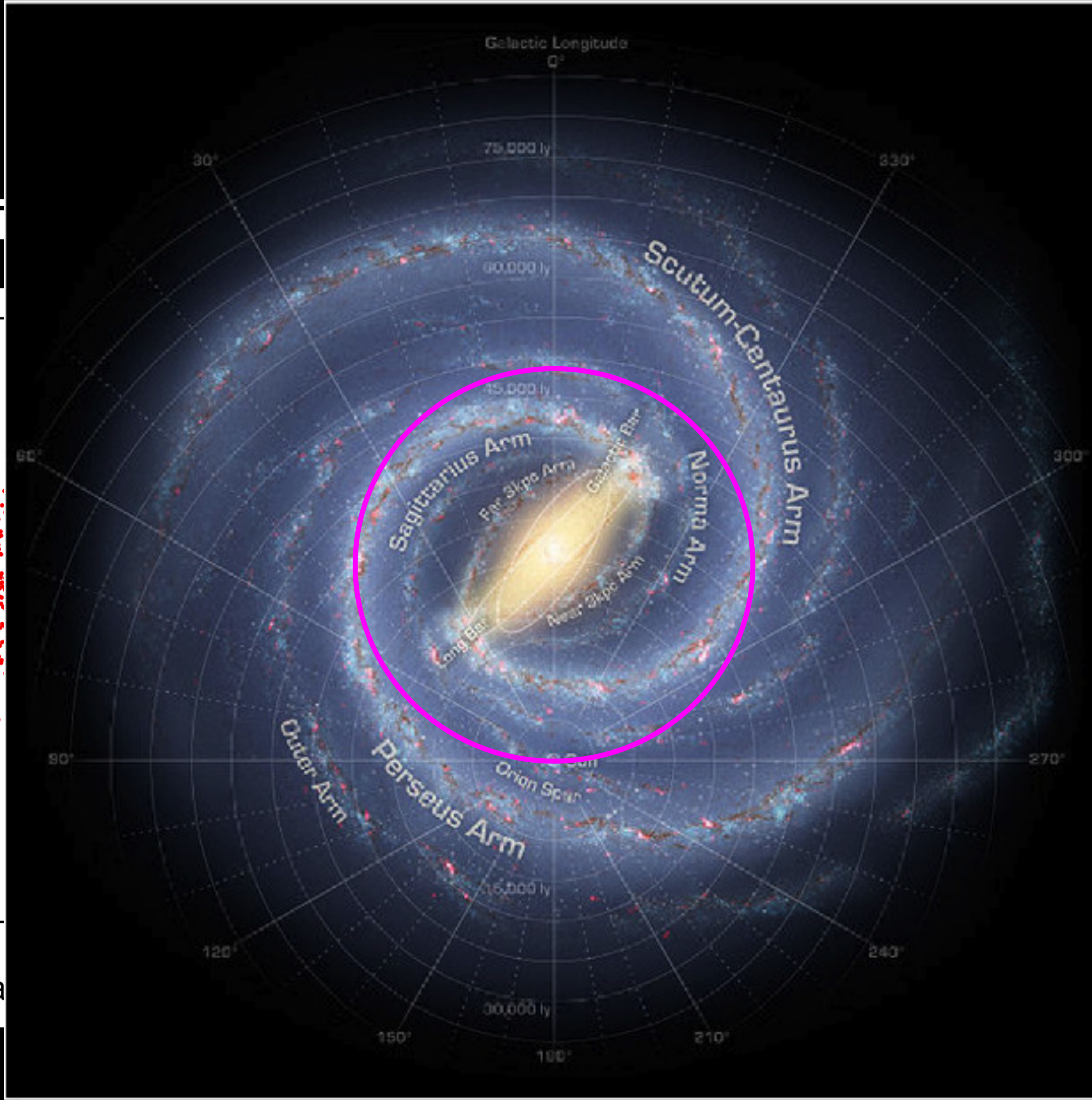
Urquhart+21

Science

Star Formation



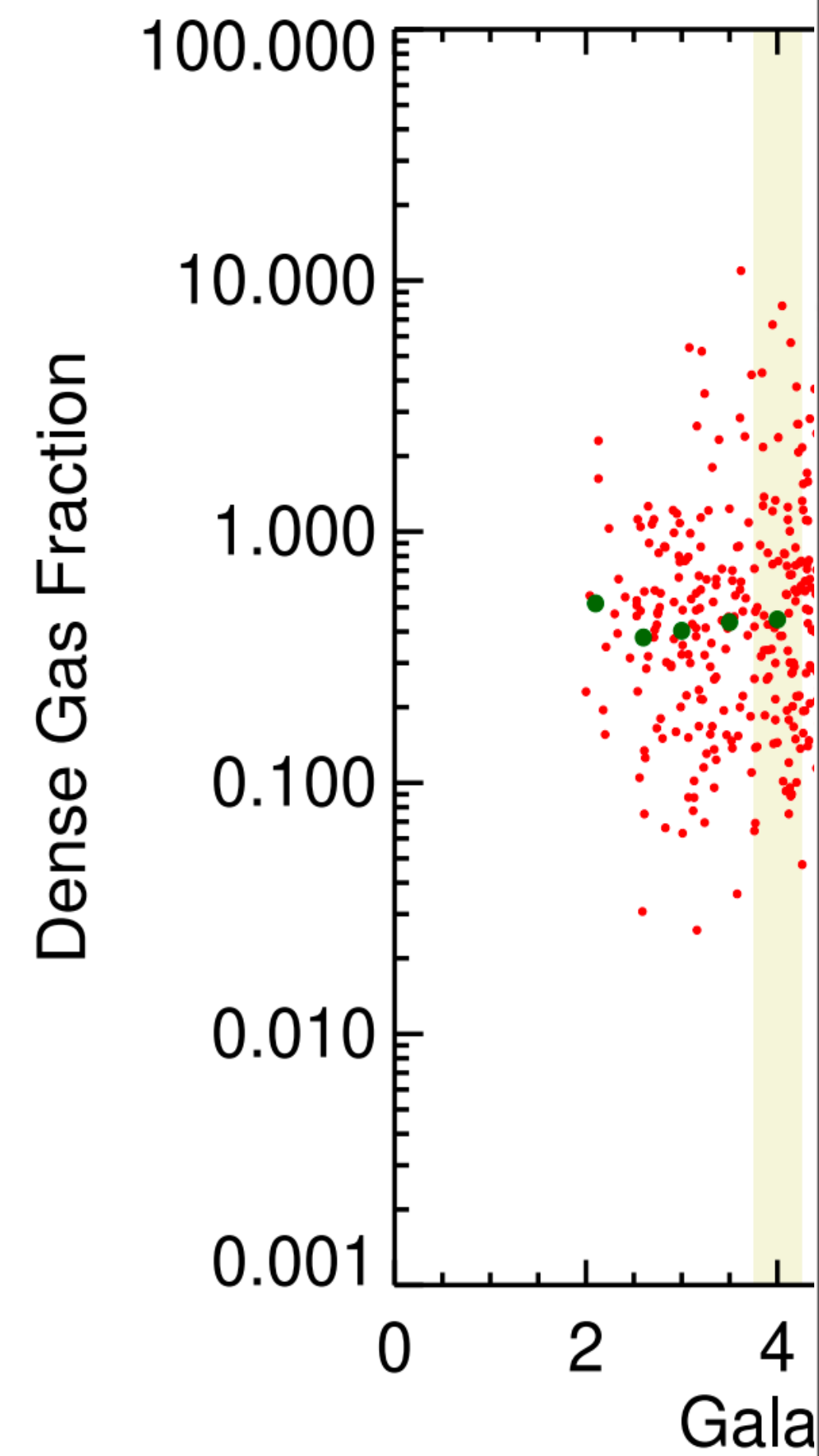
Urquhart+21



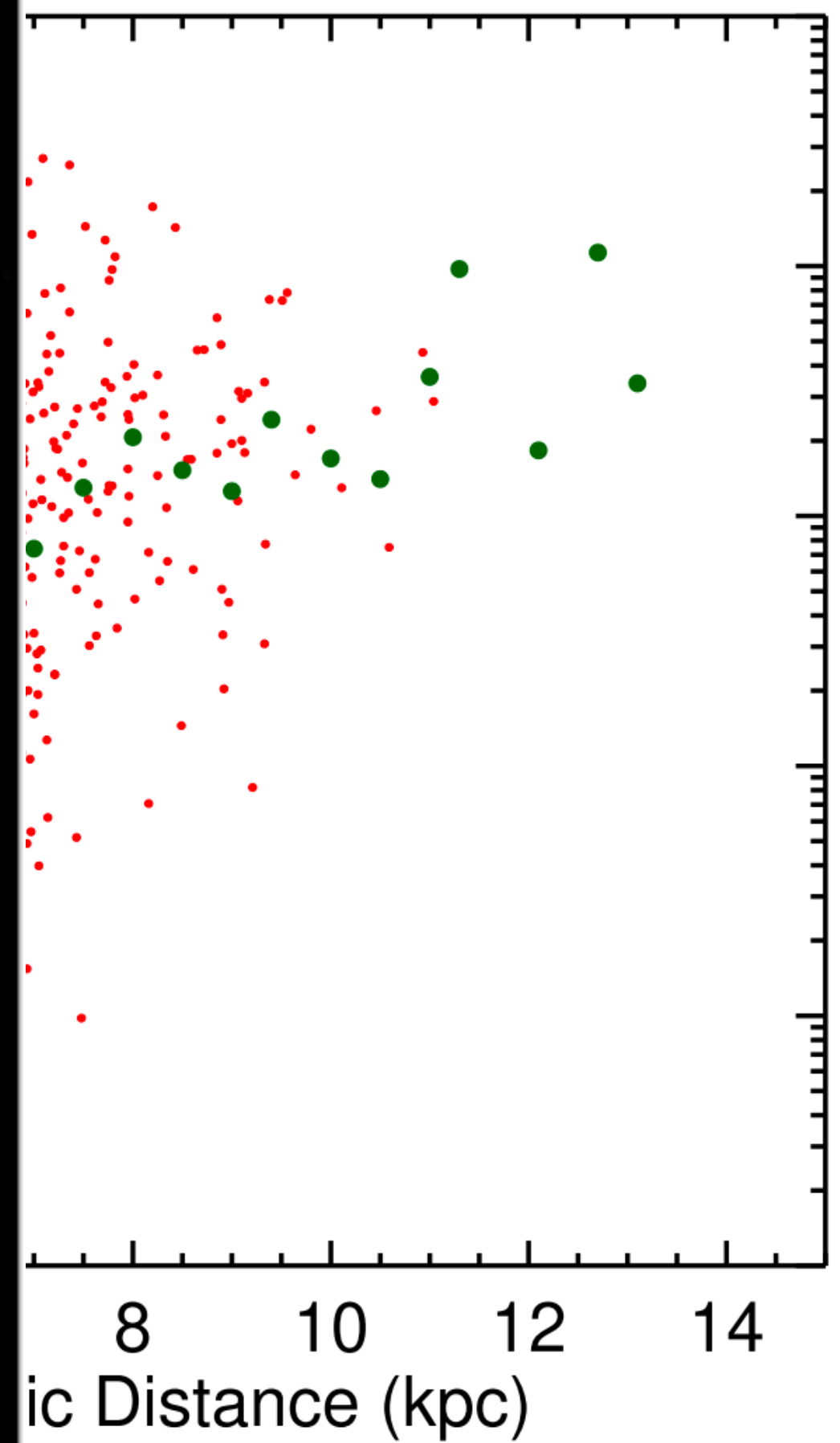
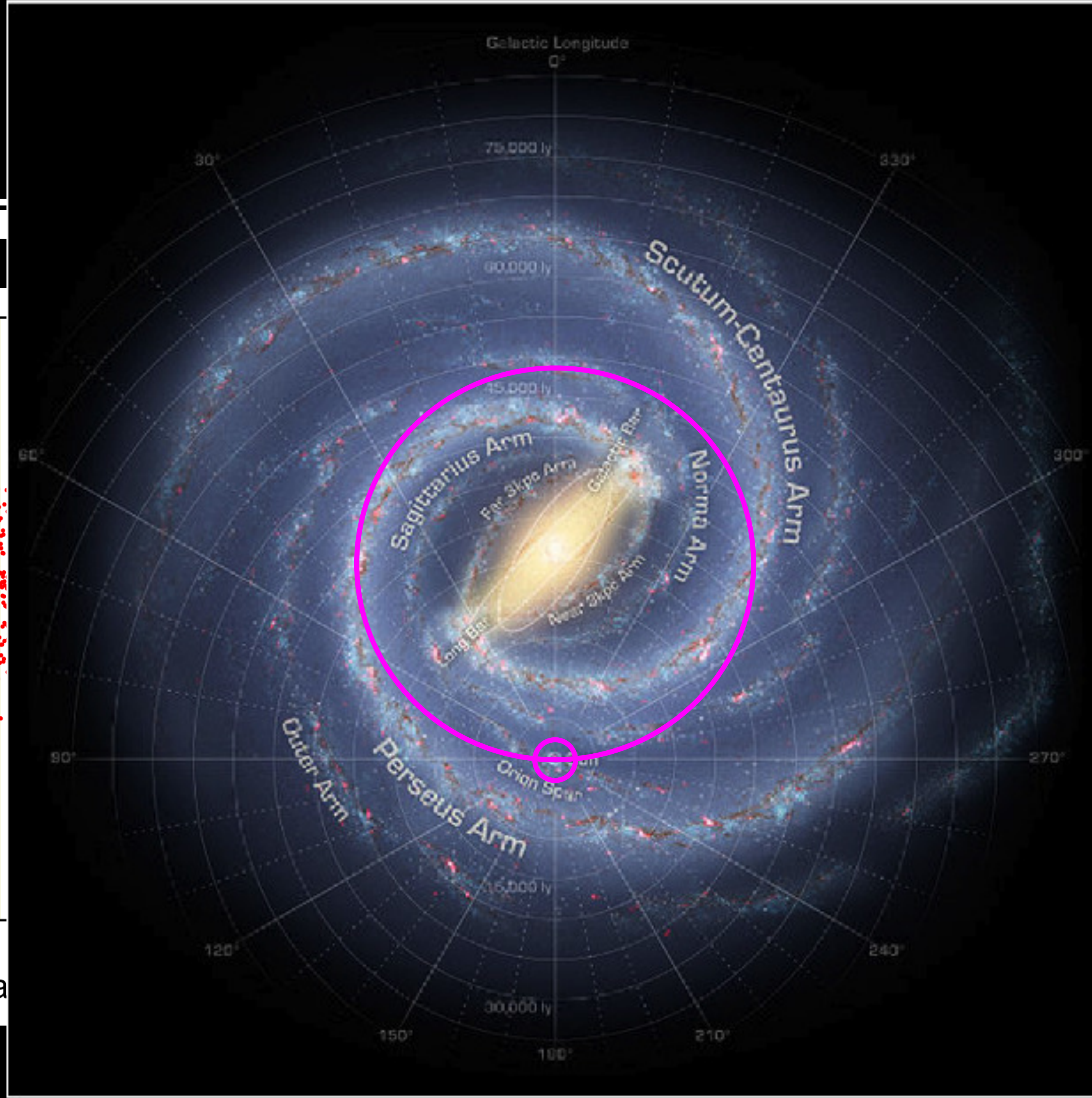
Urquhart+21

Science

Star Formation



Urquhart+21

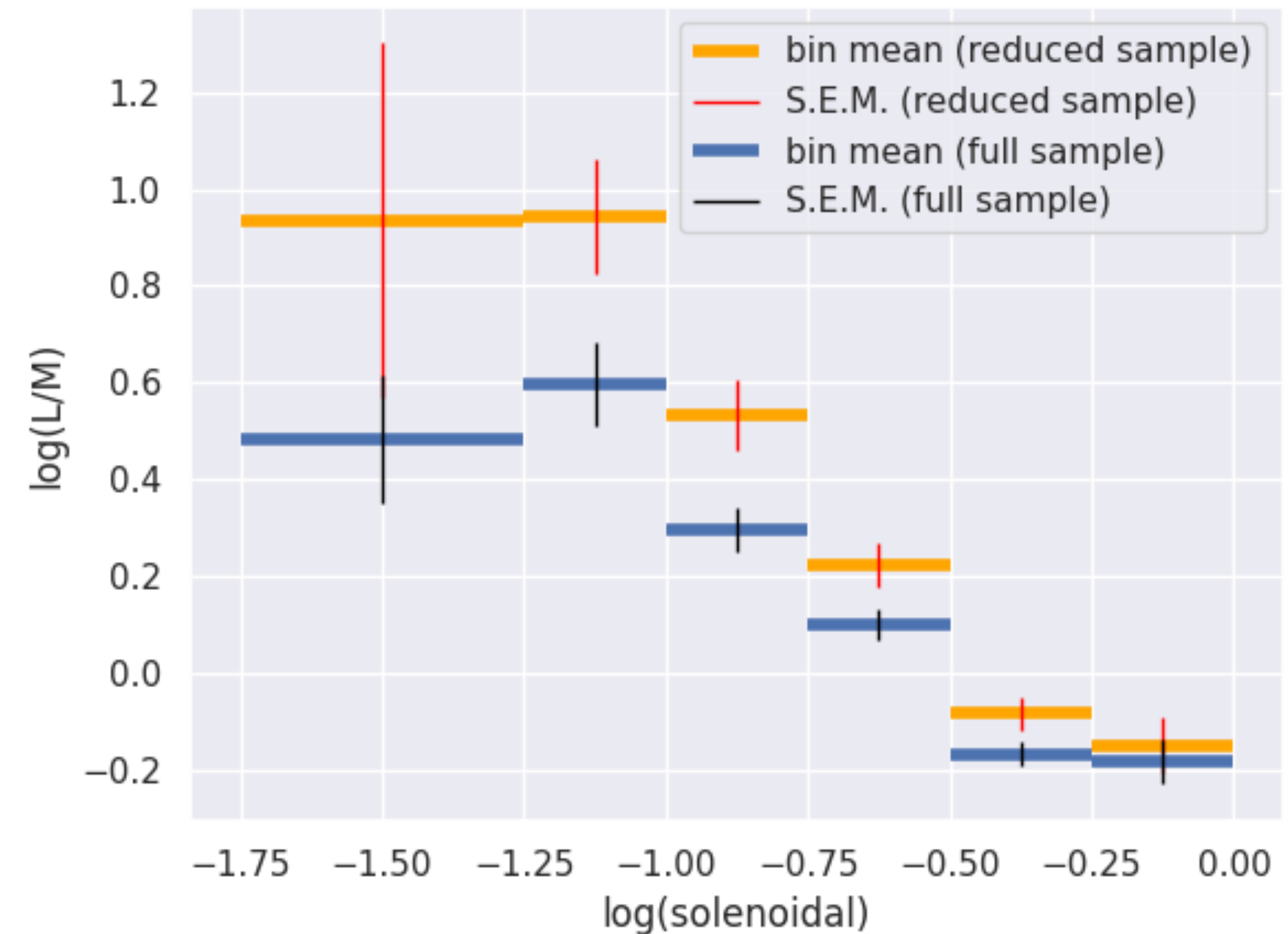
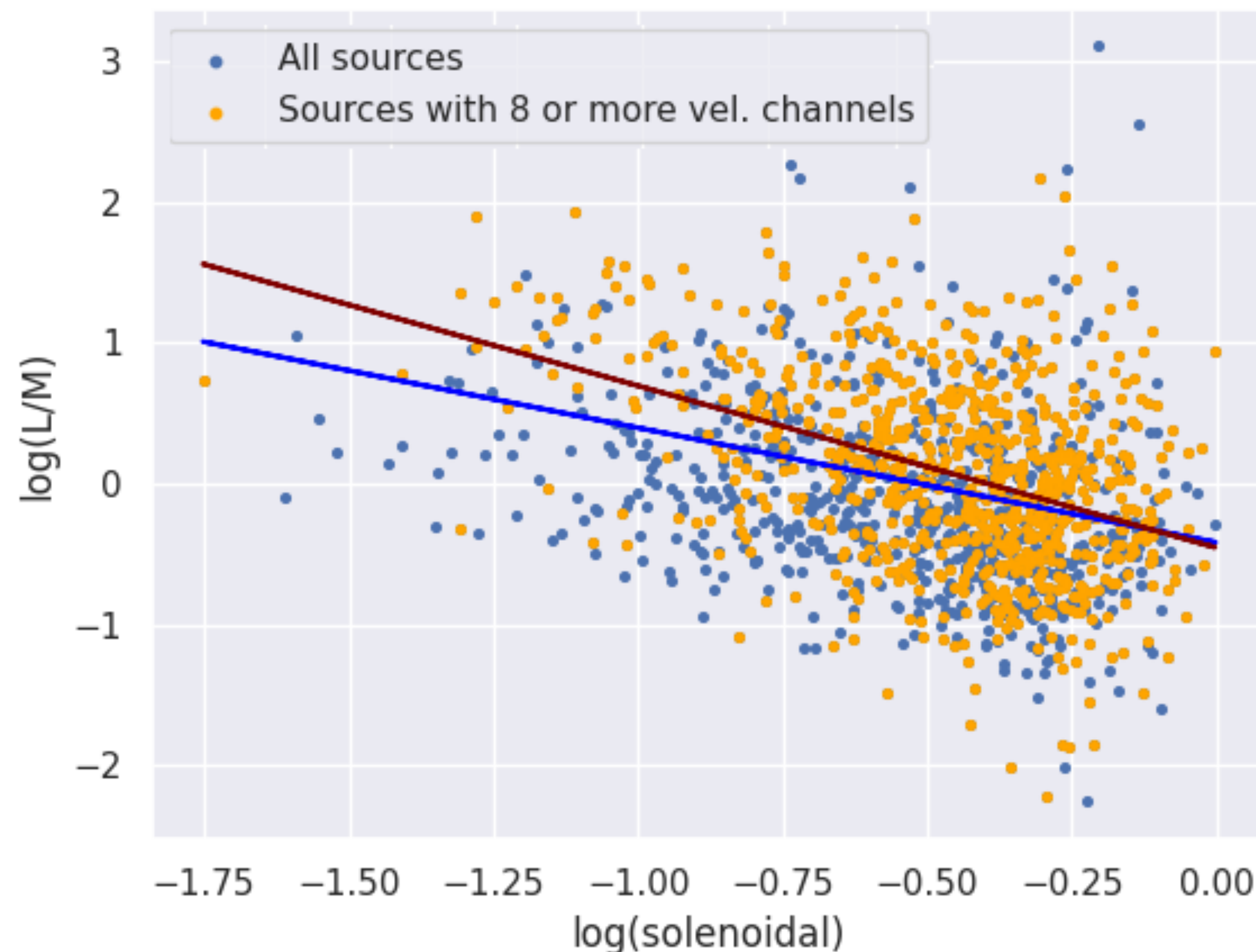


Urquhart+21

Science Goals

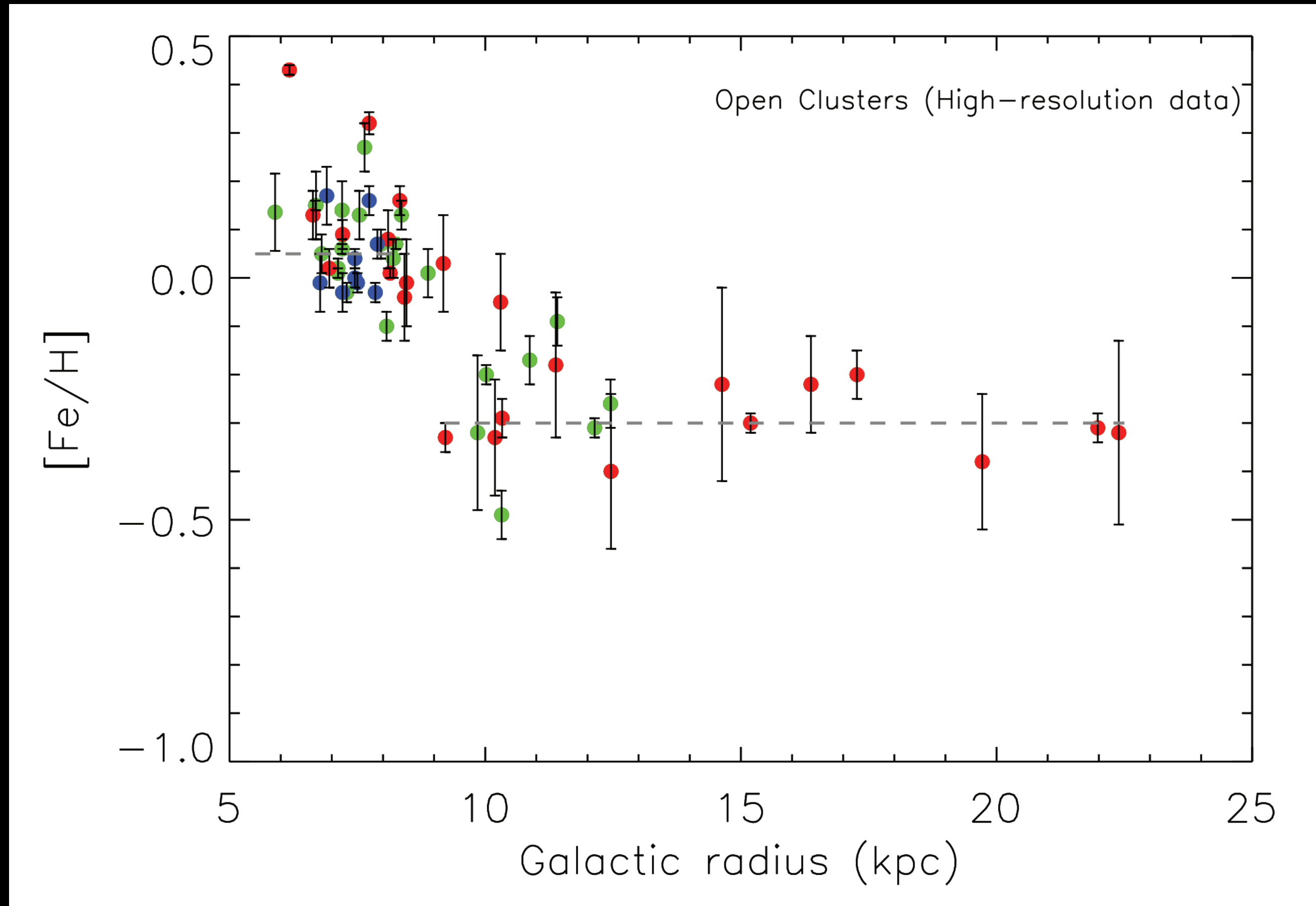
Cloud turbulence, density structure, and star formation

Ratio of compressive to solenoidal turbulence. High solenoidal fraction in CMZ clouds linked to low SFE in that region.

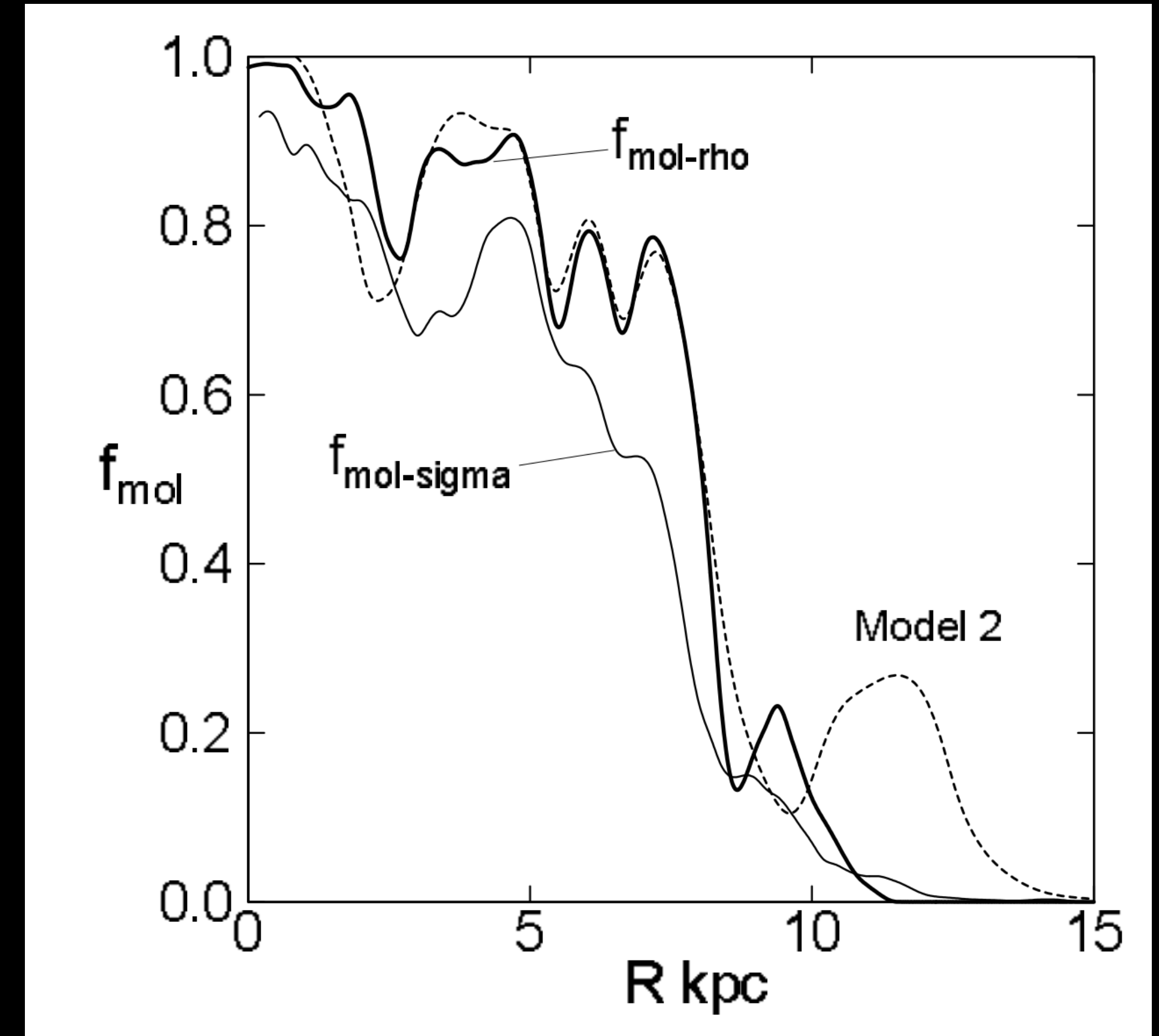


Science Goals

Cloud formation and properties in the Outer Galaxy



Lepine+11

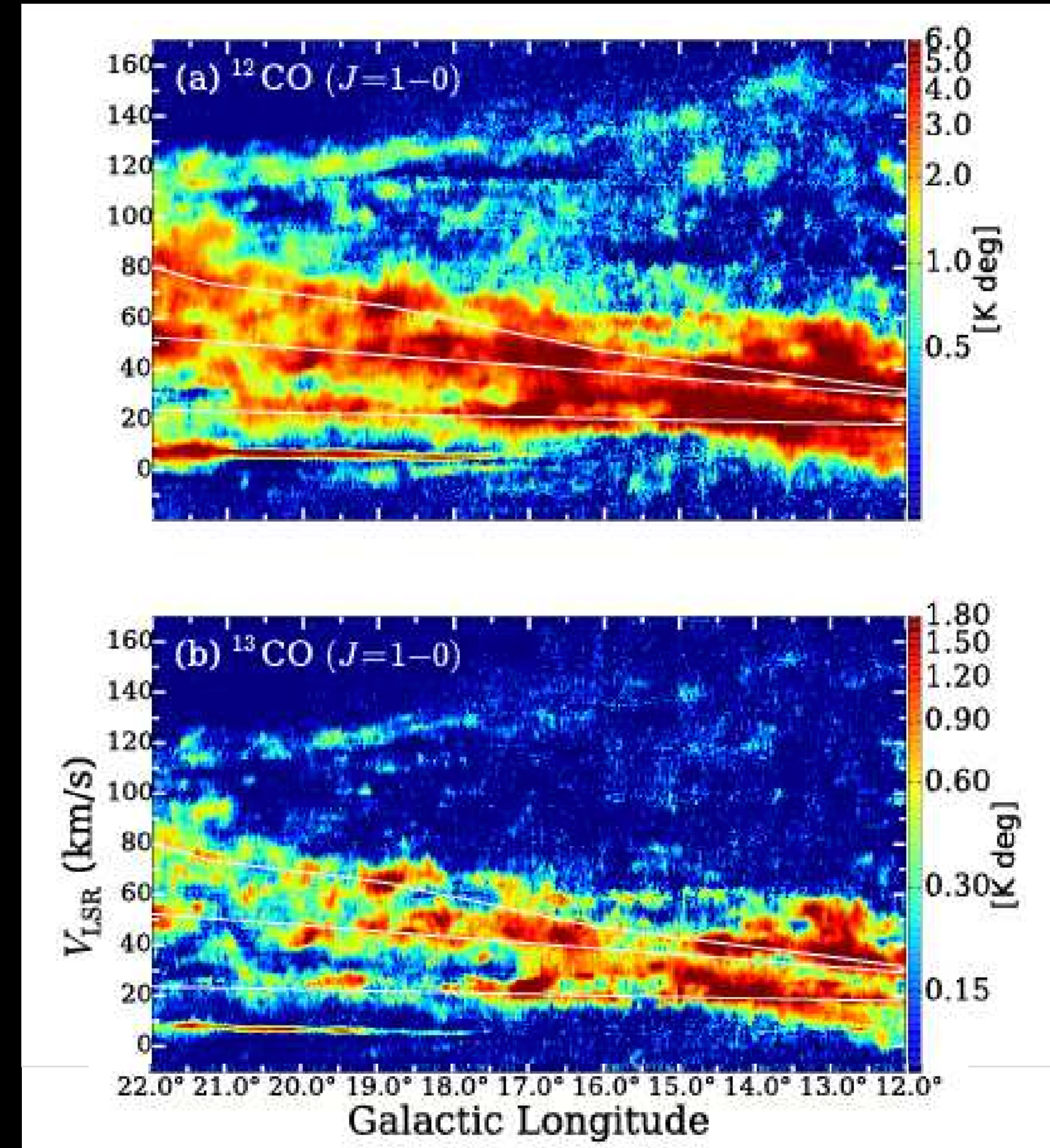
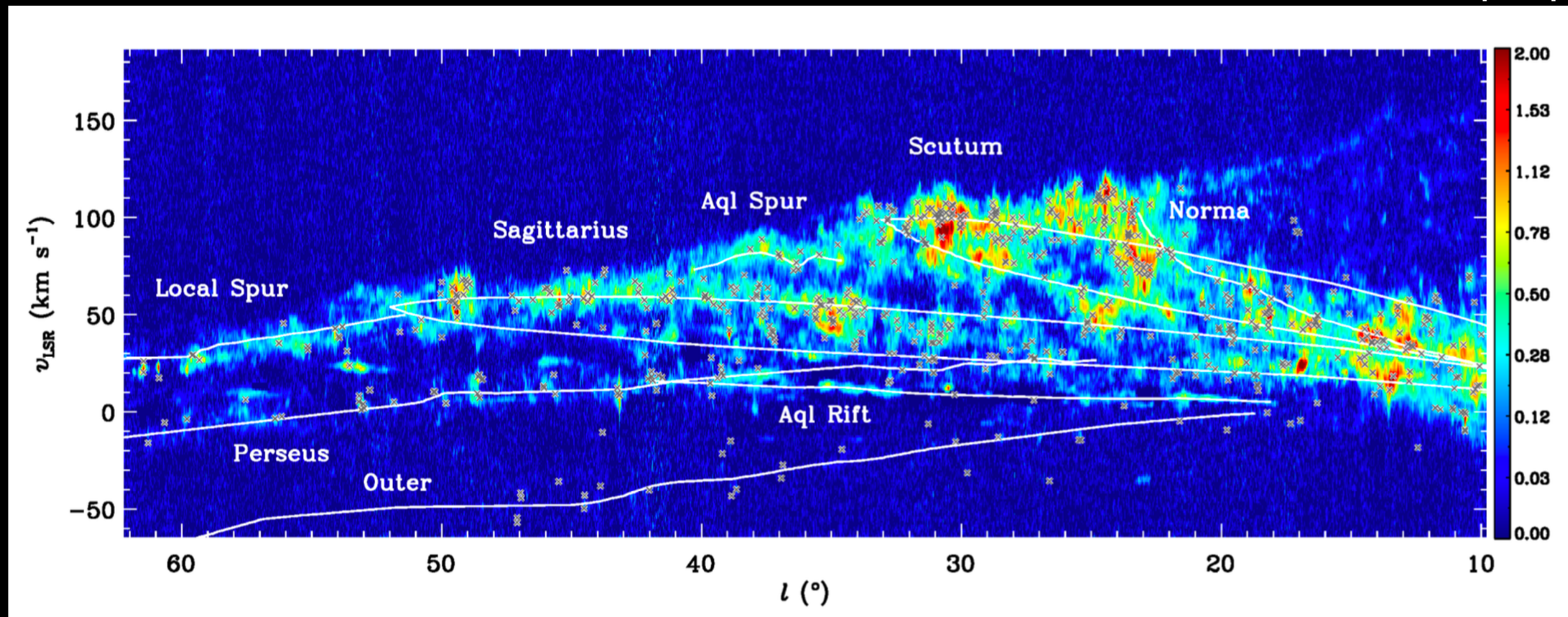


Sofue & Nakanishi 2016

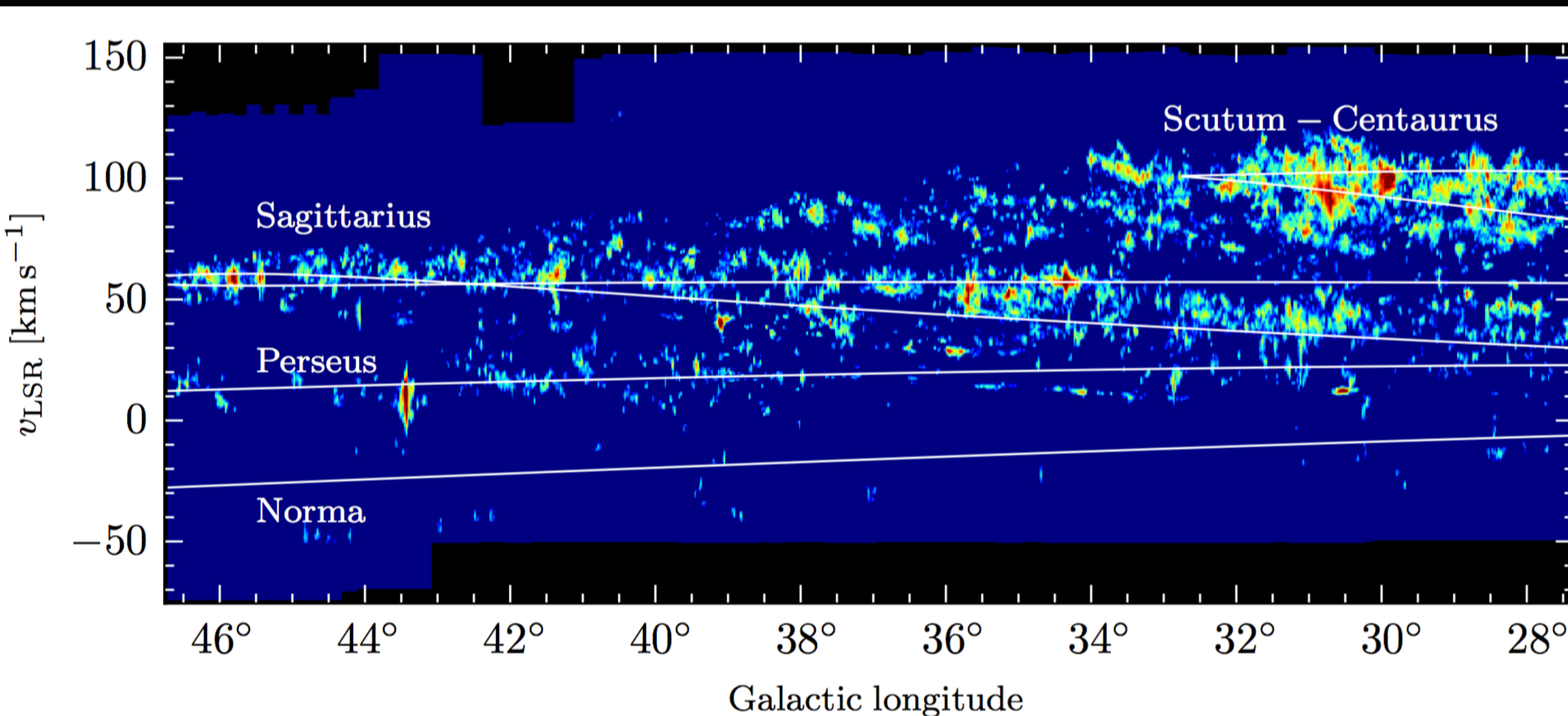
Science Goals

Galactic Structure

Park+ in prep



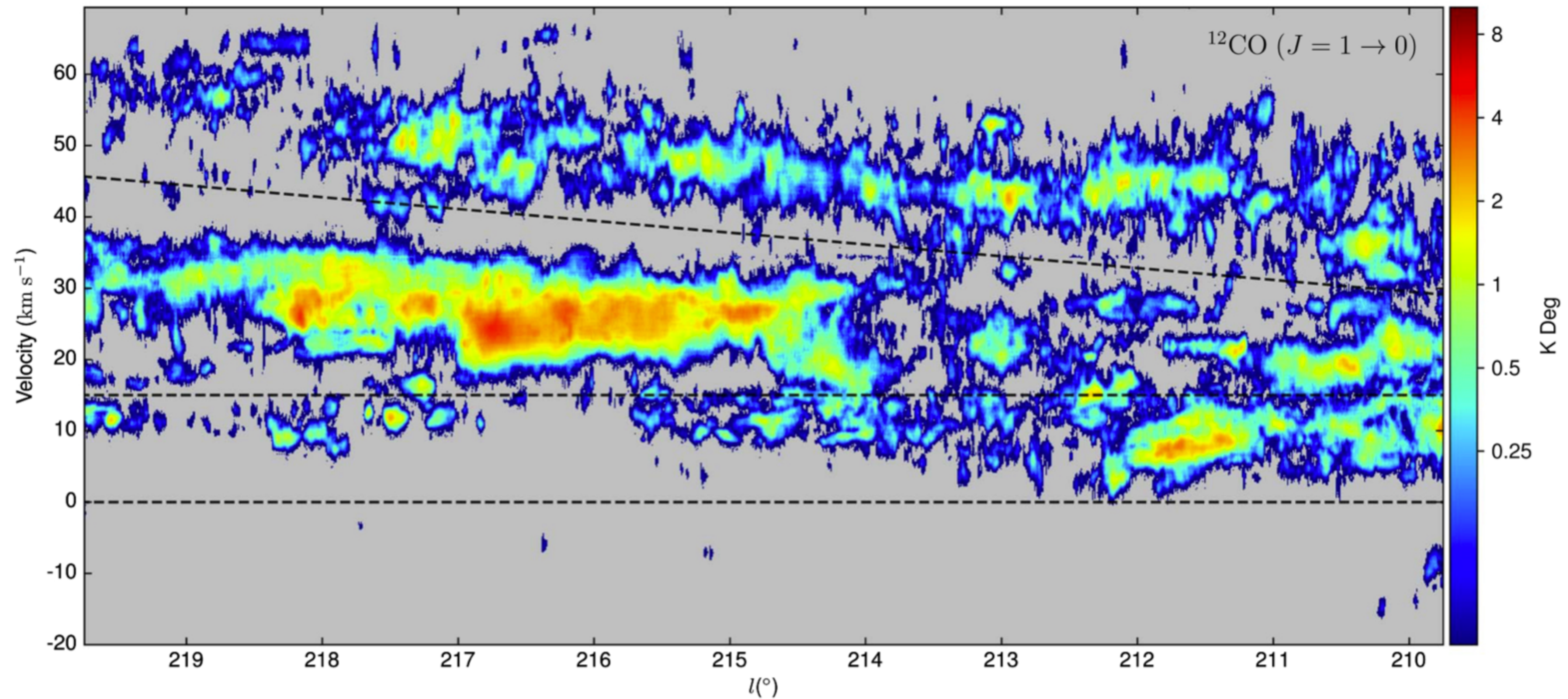
Umemoto+17



Rigby+16

Science Goals

Galactic Structure



Summary

- CLOGS - CO Large Outer Galaxy Survey
- Covering $\ell = 198^\circ - 236^\circ$, $b = -2^\circ - 0^\circ$
- Most sensitive, highest resolution Outer Galaxy survey
- Goals: investigate star formation in the Outer Galaxy, disentangle high Galactocentric distances from high heliocentric distances, and give new insight into Galactic structure in this region.